HEALTH STATUS OF THE INDIAN PEOPLE

A Supplement to the ICSSR/ICMR Report
Health for All:
An Alternative Strategy

Produced by

THE FOUNDATION FOR RESEARCH IN COMMUNITY HEALTH

Supported by

INDIAN COUNCIL OF MEDICAL RESEARCH

DECEMBER 1987

For Reference Only

COMMUNITY HEALTH CELL

47/1 St. Mark's Road, Bangalore – 560 001

THIS BOOK MUST BE RETURNED BY
THE DATE LAST STAMPED

ONLY FOR
REFERENCE

FRCH PUBLICATION

HEALTH STATUS OF THE INDIAN PEOPLE

Supplementary Document to

HEALTH FOR ALL : AN ALTERNATIVE STRATEGY

Produced by

FOUNDATION FOR RESEARCH IN COMMUNITY HEALTH

Supported by

INDIAN COUNCIL FOR MEDICAL RESEARCH

DECEMBER 1987

1116

COMMUNITY HEALTH CELL
47/1, (First Floor) St. Marks Road,
Bangalore - 560 001.

CONTENTS

Acknowledgements
Foreward

I. HISTORICAL ANALYSIS 1-18

II. ORGANISATION OF HEALTH SERVICES AND MANPOWER DEVELOPMENT 19-37

III. HEALTH EXPENDITURE PATTERNS IN INDIA 38-59

IV. COMMUNICABLE AND NON-COMMUNICABLE DISEASES 60-82

V. DRUGS AND PHARMACEUTICALS 83-106

VI. INDIAN SYSTEMS OF MEDICINE AND HOMEOPATHY 107-120

VII. POPULATION, HEALTH AND DEVELOPMENT 121-143

VIII. HEALTH OF WOMEN AND CHILDREN 145-166

IX. NUTRITION 167-181

X. ENVIRONMENT AND HEALTH 182-210

XI. HEALTH EDUCATION 211-221

INDEX 222-225

****

ACKNOWLEDGEMENT

This document "Health Status of the Indian People", is a supplement to the ICSSR/ICMR Report on 'Health for All : An Alternative Strategy', has been prepared & published in its present format with the financial support of the Indian Council of Medical Research (ICMR).

The preliminary work on this document was undertaken as a joint project of the Indian Council of Social Science Research and Indian Council of Medical Research. The present volume gratefully acknowledges the financial support of these two institutions, as well as the contributions of the following researchers in preparing the preliminary document:

BATLIWALA Srilatha
BRITTO Gabriel A.A. - who also undertook the preliminary editing of the original document.

DASWANI Mona
DUGGAL Ravi
MENON Shobha
NAIR Sumati

Subsequently, ICMR undertook to bear the cost of publishing a more concise data document. Sonya Gill undertook the final editing of this volume, including the selective revision and updating of the earlier draft.

The final drafting benefited from the support & expertise of the FRCH collective. Special mention must be made of the painstaking effort put in by Manish Mankad, Documentation Officer, and Sunita Vichare, in the computer composing of this document for its final printing.

FOREWARD

The ICSSR/ICMR report 'Health For All : An Alternative Strategy', released in 1980, has proved to be a milestone in the development of health policy and health services in India. It has influenced the National Health Policy as well as the Sixth and Seventh Five Year Plans by providing an overview of the strengths and weaknesses of our health system three decades after independence. More important, it viewed health in its widest perspective and gave due emphasis to factors such as nutrition, education and environment which, together with health services, support and determine the health of our people. This has differentiated it from most other reports which have been chiefly concerned with the technical or managerial aspect of health services and their barring the earliest reports of the Sub-Committee on National Health (Sokhey Committee) and the Health Survey and Development Committee (Bhore Committee).

A major criticism of the ICSSR/ICMR report has been that it reads more like a philosophical document not supported with adequate data, except for a few tables as appendices. In actual fact, the study group had commissioned 22 background reports from various experts (see Appendix 3 of the original report) which supplemented the expertise of its own members. Extensive data on the health conditions and health services in the country was also collated by the secretariat of the committee which was provided by the Foundation for Research in Community Health (FRCH). This data provided by the FRCH together with the background reports formed the basis of the committee's deliberations and discussions and, eventually, of its report and recommendations.

Since the inclusion of this vast data in the original report would have made it cumbersome and difficult reading for the wider readership which it had aimed for, it was decided that this be made available as a supplementary document. This task was assigned to the Foundation for Research in Community Health, for which financial support was provided jointly by ICMR and ICSSR on an equally shared basis. It is regretted that there has been inordinate delay in producing this document. There were several changes in the staff assigned to this project, and over a period of time some of the data had to be updated. The original manuscript, despite editing, proved too large for publication. The ICMR, which has supported the actual cost of this publication, requested that it be further edited to its present size. We gratefully acknowledge the financial support provided by both ICMR and ICSSR in the preparation of the initial document, and the financial support from ICMR for the publication of this abridged version.

I do wish to thank all the researchers who are acknowledged in this report. Special thanks to the effort put in by Mr. G.A.A. Britto for editing the preliminary draft document, and to Ms. Sonya Gill for revising, updating and preparing the document in its present concise format.

Since this was proposed as a supplement to the original ICSSR/ICMR report, we have generally kept to the same format in the hope that both documents will be read in conjunction. While it is not possible to do justice to the vast data which was collected in a document of such a limited size, we hope that it will prove useful to those who wish to familarize themselves with significant information in the fields that have been covered, and help direct them to the relevant source/s provided in the extensive footnotes.

Above all, it is hoped that this will stimulate individuals and institutions to undertake research in various aspects of health which urgently need further enquiry. Only thus can the much needed new direction be given to the planning and implementation of our health policies and programmes. It is a duty that we owe to the vast masses of our countrymen who are at present unnecessarily deprived of the benefits of medical science and technology which could easily transform their health status.

N.H. Antia

December 1987

DR. N.H. ANTIA

BOMBAY

LIST OF ABBREVIATIONS

AIDAN : All India Drug Action Network
AIHPP : All India Hospital Post Partum program
AIIMS : All India Institute of Medical Sciences
AIIPH : All India Institute of Public Hygiene
ANM : Auxiliary Nurse Midwife
ANP : Applied Nutrition Programme
API : Annual Parasitic Incidence
ARI : Acute Respiratory Infection
BCPW : Bengal Chemicals & Pharmaceuticals Works Ltd.
BDO : Block Development Officer
BEE : Block Extension Educator
BHW : Basic Health Worker
CARE : Committee for American Relief Everywhere
CAT Scan : Computerised Axial Tomography
CBHI : Central Bureau of Health Intelligence
CCH : Central Council of Homeopathy
CCIM : Central Council of Indian Medicine
CCRAS : Central Council for Research In Ayurvedh & Siddha
CCRIMH : Central Council for Research In Indian Medicine and Homeopathy
CCRUM : Central Council for Research In Unani Medicine
CCRYN : Central Council for Research In Yoga & Naturopathy
CDP : Community Development programme
CED : Centre for Education & Documentation
CFPC : Central Family Planning Council
CFRA : Combined Finance & Revenue Accounts
CGHS : Central Government Health Scheme
CHC : Community Health Centre
CHEB : Central Health Education Bureau
CHG/V/W: Community Health Guide/ Volunteer/Worker
CIMS : Current Index of Medical Specialities
CLI : Central Labour Institute
CIRTPC : Central Institute of Research & Training in Public Cooperation
CMIE : Centre for Monitoring Indian Economy
CPHEE : Central Public Health & Environmental Engineering Organisation
CSE : Centre for Science & Environment
CSIR : Council for Scientific & Industrial Research
CSO : Central Statistical Organisation
CVD : Cardiovascular Disease
DEC-C : Diethylacarbamazine Citrate
DFWO : District Family Welfare Officer
DGHS : Directorate General of Health Services
DHO : District Health Officer
DSF : Delhi Science Forum
DTP : District TB Programme
EPI : Expanded Programme of Immunization
ESCAP : Economic & Social Commission for Asia & Pacific
ESIS : Employees State Insurance Scheme
EWS : Economically Weaker Sections
FAO : Food & Agricultural Organisation
FERA : Foreign Exchange Regulation Act
FMRAI : Federation of Medical Representatives Associations of India
FP : Family Planning
FPAI : Family Planning Association of India
FRCH : Foundation for Research In Community Health
GDP : Gross Domestic Product
GOI : Government of India
HA/S : Health Assistant/ Supervisor
HAL : Hindustan Antibiotics Ltd.
HS : Harvard Standard
HW : Health Worker
IAS : Indian Administrative Service
ICDS : Integrated Child Development Services
IDMA : Indian Drug Manufacturers Association

IEC	: Information, Education & Communication
ICMR	: Indian Council of Medical Research
ICSSR	: Indian Council of Social Science Research
IDPL	: Indian Drugs & Pharmaceuticals Ltd.
IMPCL	: Indian Medicines Pharmaceutical Corporation Ltd.
	: Infant Mortality Rate
INH	: Isonicotine Acid Hydrazide
IPPF	: International Planned Parenthood Federation
ISM	: Indian Systems of Medicine
IUD	: Intra Uterine Device
JIPMER	: Jawahar Institute of Post-Graduate Medical Education
KAP	: Knowledge, Attitude, Practice
K CAL	: Kilo Calories
LCU	: Leprosy Control Unit
LHV	: Lady Health Visitor
LIG	: Low Income Group
MCH	: Maternal & Child Health
MCW	: Maternal & Child Welfare
MDM	: Mid-day Meal Programme
MEM	: Mass Education & Media
MFC	: Medico Friend Circle
MIMS	: Monthly Index of Medical Specialities
MNC	: Multinational Corporation
MNP	: Minimum Needs Programme
MO	: Medical Officer
MOHFW	: Ministry of Health & Family Welfare
MOP	: Modified Plan of Operations for Malaria Control
MPW	: Multipurpose Worker
MTP	: Medical Termination of Pregnancy
NCAER	: National Council of Applied Economic Research
NCERT	: National Council of Education Research & Training
NCR	: National Cancer Registery
NEERI	: National Environment Engineering Research Institute
NFCP	: National Filariasis Control Programme
NFI	: Nutrition Foundation of India
NGCP	: National Goitre Control Programme
NGO	: Non-government Organization
NICD	: National Institute of Communicable Diseases
NIHFW	: National Institutes of Health & Family Welfare
NIN	: National Institute of Nutrition
NIOH	: National Institute of Occupational Health
NIPCCD	: National Institute of Public Cooperation & Child Development
NLEP	: National Leprosy Eradication Programme
NMEP	: National Malaria Eradication Programme
NNMB	: National Nutrition IMR Monitoring Bureau
NNT	: Neo-natal Tetanus
NTI	: National Tuberculosis Institute
NTP	: National Tuberculosis Programme
NORAD	: Norwegian Agency for Development
NPC	: National Planning Council (Jawaharlal Nehru Committee 1937)
NSSO	: National Sample Survey Organization
OPD	: Out Patient Department
OPPI	: Organization of Pharmaceutical Producers of India
ORG	: Operations Research Group
ORT	: Oral Rehydration Therapy
PAS	: Para-amino-salicytic acid
PCM	: Protein Calorie Malnutrition
PEO	: Programme Evaluation Organization
PHC	: Primary Health Centre
PHERU	: Public Health Engineering Research Unit (AIIPH)
PHN	: Public Health Nurse
R & D	: Research & Development
RF	: Rheumatic Fever
RHD	: Rheumatic Heart Disease
RHFWC	: Regional Health & Family Welfare Centre
RMP	: Registered Medical Practitioner
ROHC	: Regional Occupational Health Centre
SET	: Survey Education & Treatment
SHC	: Subsidiary Health Centre
SHEB	: State Health Education Bureau
SI	: Sanitary Inspector
SIDA	: Swedish International Development Agency
SMON	: Sub Acute Myelo Optic Neuropathy
SNP	: Special Nutrition Programme
TRC	: Tuberculosis Research Centre

ULC	:	Urban Leprosy Centre
UNCTAD	:	UN Commission on Trade and Development
UNEP	:	UN Environment Programme
UNICEF	:	UN International Children's Education Fund
UNIDO	:	UN Industrial Development Organisation
USAID	:	United States Agency for International Development
UTs	:	Union Territories
VCRC	:	Vector Control Research Centre
VHAI	:	Voluntary Health Association of India
VHG	:	Village Health Guide
WHO	:	World Health Organisation

I

HISTORICAL ANALYSIS

1. Introduction. 1

2. The Pre-British Period 1

3 The British Period 2

4. The Sokhey Committee Report and the Bhore Committee Report 3

5. Health Sector in Development Planning 5
   - Five year plans (1951-85)
   - The Mudaliar Committee Report (1961)
   - The Shrivastava Committee Report (1975)

6. Evaluation of the Health Services System 13
   - i. The problem of policy
   - ii. Resource distribution
   - iii. Organisational and administrative issues
   - iv. Lack of community involvement
   - v. Training and value orientation of health personnel

7. Need for Evolving a Health Policy : The National Health Policy 17

8. The Seventh Five Year Plan (1985-90) 18

HISTORICAL ANALYSIS

1. INTRODUCTION

Health care has emerged as a basic concern in all nations, though the problems in the so-called 'developing' world are radically different. In the latter, the health of the people is a significant factor in economic growth, and the major issue is how best to deliver health care to the majority, most of whom are poor, rural and inaccessible. (1) The colonial experience continues to influence the health planning and objectives of these nations; the implicit desire to build sophisticated, curative and urban-oriented health complexes may not be relevent to their health problems. In India, a further complication has been created by the superimposition of the western allopathic system upon an earlier advanced system of indigenous medicine. (2)

The present chapter attempts to describe and analyse the health system at various periods of India's history, in order to highlight the ideological, organisational, manpower and policy problems facing it.

2. THE PRE-BRITISH PERIOD

Health culture and the practice of health care have a long history in the sub-continent. The planned cities of the Indus valley civilization indicate an awareness of the significance of environmental sanitation and lay emphasis on the preventive aspects of health. (3)

The roots of the present-day indigenous systems can be traced back to the development of vedic medicine, following the Aryan migrations to the Indus Valley. The Ayurvedic System was one of the earliest attempts to conceptualise the science of health, and to utilise rational methods for diagnosing illnesses. The vedic Samhitas which were basically religious texts, contain concepts of anatomy, physiology and pathology that are "impressively rational". (4) The pharmacology developed by this system has relevance for current pharmacological research.

The reign of Ashoka Maurya (279-236 BC) was responsible for the spread of social medicine, manifest in a public health care system that included hospitals and sanitoria for men, women and children (5). By the 10th century A.D. this system of medicine had reached its high point. (6)

---

(1) J. Bryant, Health and the Developing World, (ITHACA: Cornell University Press, 1969), p.20; M. King (ed.), Medical Care in developing countries, (London: Oxford University Press, 1966), p.1.

(2) C, Leslie, "The Modernization of Asian Medical Systems", in J.J. Poggie and R.N. Lynch (eds), Rethinking Modernization: Anthropolocigal Perspectives, (Westport : Greenwood Press, 1974).

(3) D. Banerji, "Social and Cultural Foundations of Health Services Systems", Economic and Political Weekly, Vol.IX, Nos.32-34, 1974, p.1333; K.N. Rao., "Public Health and Health Services", Encyclopaedia of Social Work, Vol.I (New Delhi: Publication Division), p.364.

(4) Banerji, 1974, p. 1333.

(5) Rao. 1968, p.365.

(6) For the social history of health services, see also D. Banerji, Health and Family Planning Services in India. (New Delhi: Lok Paksh, 1985) pp. 4-12.

In the Medieval period, physicians from West Asia who were trained in the Unani system, compiled and translated the Ayurvedic texts. Hakim Yoosufi (16th Century), a physician in the courts of Babar and Humayun, is said to have synthesized "Arabian, Persian, and Ayurvedic thought and produced a composite and integrated medical system". (7) Historical evidence indicates a high degree of interaction and cooperation between the practitioners of these two systems, in their quest for knowledge of the human body and its functioning.

Thus, by the late 19th and early 20th century, the methods of an Ayurvedic physician were "radically different from the classical texts, and were deeply influnced by the Galenic (Unani) traditions in Islamic medicine". The best example of this was the adoption of sphygmology (Pulse lore) from Unani, "which eventually became the symbol of an ayurvedic physician's skill". (8) The Indian masses continued to rely upon traditional practitioners throughout the colonial period. However, the colonial policy favoured western medicine, and the denial of state patronage to the indigenous systems led to their neglect and further stagnation. The grafting of the western medical system on the indigenous one has left a complex legacy: a pluralistic health system, which may even yet provide part of the answer to India's public health needs.

3. THE BRITISH PERIOD

Western medicine was introduced in India in the latter half of the 18th century mainly to serve the needs of the colonial settlers and their armed forces. The emergence of an organised public health system in fact, dates back to the appointment in 1859 of a special Royal Commission to inquire into the causes of the poor physical conditions of the sepoys in the British Indian army. (9)

These conditions typified the health problems of the Indian people at large. However the large-scale extension of medical services to the rural areas occurred only during periods of massive epidemice of diseases such as plague, cholera and smallpox. Public health services in the form of sanitation and public works were limited to the larger towns and cities. Only a small elite segment of the Indian population had access to western medical facilities; the rest of the population relied upon the indiganous practitioners, or what little medical care they could get from the few government dispensaries, private practitioners, and missionary and philanthropic institutions. (10) The exploitative orientation of colonial policy only served to impoverish the masses and disrupt the ecological balance; it was never committed to tackling the massive problems of village sanitation and disease control. (11)

The Report of the Health Survey and Planning Committee (Bhore Committee), (12) submitted to the Government in 1946, gave the following

---

(7) Leslie, 1974, p.89.

(8) Ibid, p.90.

(9) Rao, 1968, p.365.

(10) Banerji, 1974, p.1334; Banerji, 1985, p.12.

(11) National Planning Committee, Sub-Committee on National Health, Report (Bombay: Vora, 1949).

(12) Government of India, Health Survey and Development Committee (Bhore Committee), Report, Vols. I-IV, (New Delhi: Manager of Publications, 1946).

dismal description of health conditions in the country on the eve of Independence:*

General Death Rate - 22.4 (per 1000 population)
Infant Mortality Rate - 162 (per 1000 live births) Maternal Mortality Rate - 20 (per 1000 live births)
Expectation of Life at Birth - 26.46 yrs. (females)
26.91 yrs. (Males)
Death Rate of Children under 10 yrs. - 48%

Disease-wise causes of deaths:

Cholera	2.4%
Small-pox	1.1%
Plague	0.5%
Fevers (including Malaria)	58.4%
Dysentry	4.2%
Respiratory Diseases	7.6%
Others	25.8%
Total :	100.0%

*All figures are for British India in 1944 & do not include the Princely States.

The Committee pointed out that high morbidity and mortality (particularly among mothers and children) were largely preventable, and were mainly due to the absence of safe drinking water, sanitation, waste disposal, poor nutrition, lack of preventive and curative health services, and poor health consciousness among the people themselves. These conditions were worse in the rural areas.

The country also faced a serve shortage of trained personnel to undertake health and medical work, as indicated by the ratios of health personnel to population. (13) The numbers of hospitals and dispensaries were highly inadequate and generally concentrated in urban areas. There was only 1 bed per 4000 population, and 75% of all doctors were in urban private practice. Vital statistics regarding births, deaths and notifiable diseases were insufficient and unreliable due to defects in registration and compilation.

Independent India, however, did inherit a limited infrastructure of modern health services from the British. Medical training initially oriented to the needs of the army medical personnel, was expanded and institutionalised in the licentiate courses offered by the Universities of Calcutta, Bombay and Madras. A system for maintaining vital statistics for understanding the disease pattern, was initiated by the Birth and Death Registration Act of 1873; the Vaccination Act of 1880 officially recognised the imperative of vaccinating against preventable diseases. The Plague Commission of 1886 and the Epidemic Diseases Act of 1887 were of a similar significance. As far back as 1887, the Army Sanitation Commission had recorded that four-fifth of all registered mortality was due to preventable diseases. (14) The British also established an important concept neglected from the time of Ashoka - that the health of the people is the responsibility of the state.

4. THE SOKHEY COMMITTEE REPORT AND THE BHORE COMMITTEE REPORT

The health conditions of the people and the state of health services

---

(13) Ibid, Vol.IV, p.4.

(14) Rao, 1968, p.365.

became an issue for the national movement. The Indian National Congress in 1938 set up the National Planning Committee (NPC) under the Chairmanship of Jawaharlal Nehru. The sub-committee on National Health of the NPC, under the chairmanship of Col. Santok Singh, was formed to assess the health situation and services in the country, and recommend measures for their improvement. It submitted an interm report in 1940, and its final report in 1948. (15) The NPC adopted a resolution on August 31, 1940, based on the interim report, urging the integration of curative and preventive functions in a single state agency and the responsibility of the state in the maintenance of health conditions. The NPC also endorsed the recommendations of the Bhore Committee.

The Health Survey and Planning Committee appointed in 1944 by the British authorities under the chairmanship of Sir Joseph Bhore, generally referred to as the Bhore Committee, (16) was deeply influenced by the nationalist aspirations, the welfare state movement in the UK and the socialist developments in the USSR. Its report envisaged a people - oriented health service and a high level of public participation, and its recommendations were accepted as the blueprint for the development of health and medical services in India by the national Government.

Appraisal of the Bhore Committes's Recommendations:

The Bhore Committee favoured a decentralised health structure with the District as the main unit for planning and co-ordination, and the Primary Health Unit as the nucleus of integrated preventive - promotive - curative health care services. It suggested a scheme for the phased development of Primary and Secondary Health Units and District Health Centres, and the nature of staffing pattern at each level. However the First Plan outlay of Rs. 65.2 crores for the health sector was far short of the estimated expenditure recommended in the report. (17) In the decentralised structure, the role of the centre was to formulate the broad health goals. Despite the establishment of the three-tier Panchayat-Raj system in the rural areas, the power of financial allocation is retained by the states and the centre. (18) This is a major reason why relevant area-based planning has not become a reality.

A significant recommendation of the committee concerned the scheme to achieve the active pariticipation of the public. A citizen's committee of 5-7 voluntary workers was to be set up in every village selected by the Medical Officer and unanimously approved by the people. Each member would be trained in one health activity: interpretation of the health centre programme, initiation of voluntary preventive activities (draining pits, etc.), dispensing of simple drugs for common ailments, collection of vital statistics and carrying out anti-epidemic measures. These trained villagers resemble the later Chinese scheme of barefoot doctors and the contemporary Community Health Workers (CHWs). The concept did not take

---

(15) National Planning Committee, Sub-Committee on National Health (Sokhey Committee), Report, (Bombay: Vora, 1948).

(16) GOI, 1946.

(17) For the estimated expenditure over the first ten year period, see GOI, Vol.IV, 1946, p.87.

(18) S.N. Dubey and R. Murdia, Structure and Process of Decision making in Panchavat Raj Institutions, (Bombay: Somaiya, 1976). pp. 121-147.

root, and the Health Committees set up under the Community Development Programme became defunct.

On the question of training physicians, the Report recommended that the licentiate medical courses be abolished in order to standardise the quality of medical care between the rural and urban areas. However, in a highly significant "minute of dissent", Dr. Viswanath and Dr. Dutt of the committee declared that "the 'basic' doctor, as envisaged, will not willingly fit into the rural scheme, except under conditions of destitution". (19)

The 'social physician' forseen by the committee is still elusive, the Departments of Social and Preventive Medicine in most medical colleges are sanctuaries for the less successful or unmotivated, while irrelevant and expensive super-specialisations are the goals of the best and the brightest. (20)

5. HEALTH SECTOR IN DEVELOPMENT PLANNING

With the attainment of independence, India adopted the instrument of planning for the purpose of socio-economic development and for raising the standard of living of the people. In Banerji's words, "Conceptually then, Indian planners recognised the need for tackling problems such as unemployment, malnutrition, social justice, housing and environmental sanitation, along with developing integrated health services to cover the entire population'. (21) The provision of health services to the entire population was made a Directive Principle of State Policy in the Constitution.

The First Five Year Plan (1951-56)

The First Plan's (22) budgetry outlay was modest for all sectors, but it set a trend by according to the Health Sector a low priority relative to programmes of direct economic benefit. With each successive plan the percentage outlay expenditure as a propotion of the total budget, has decreased from 3.3% in the First Plan to 3.0% - Second Plan, 2.6% - Third Plan, 2.1% -Fourth Plan, 1.9% - Fifth Plan, 1.8% - Sixth Plan and 1.8% - Seventh plan (Table I).

The health objectives of the First Plan were as follows:

a. Provision of water supply and sanitation
b. Control of malaria
c. Preventive health care of the rural population through health units
d. Health services for mothers and children
e. Training and health education
f. Self-sufficiency in drugs and equipment
g. Family planning and population control

---

(19) Quoted in O.P. Verma, "Present Pattern of Rural Health Services in India", Indian Journal of Medical Education, Vol. XII, Nos. 3&4, p.163.

(20) J.R. Bhatia, "Training in Preventive and Social Medicine: Reasons for failure to achieve desired results, I-A Review; II - Analysis of Reasons", Indian Journal of Medical Education, Vol. XII, Nos. 1 & 2, pp. 27-31.

(21) Banerji, 1985, p.23.

(22) Government of India, Planning Commission, First Five Year Plan 1951-56, (New Delhi : Planning Commission, 1951).

Table I: PATTERN OF INVESTMENT IN HEALTH (PUBLIC SECTOR).

(Rs. crores)

SECTOR	I	II	III	INTER PLAN	IV	V	INTER PLAN	VI	VII
	1951-56	1956-61	1961-66	1966-69	1969-74	1974-79	1979-80	1980-85	1985-90
TOTAL PLAN OUTLAY (all heads of development)	1960.0 (100)	4672.0 (100)	8576.5 (100)	6625.4 (100)	15778.8 (100)	39426.2 (100)	12176.5 (100)	95700.0 (100)	180000.0 (100)
HEALTH (% of total)	65.2 (3.32)	140.8 (3.01)	225.9 (2.63)	140.2 (2.11)	335.5 (2.12)	760.8 (1.92)	223.1 (1.83)	1821.1 (1.86)	3392.89 (1.88)
FAMILY PLANNING (% of total)	0.1 (0.005)	2.2 (0.047)	24.9 (0.29)	70.4 (1.06)	278.0 (1.76)	491.8 (1.24)	118.5 (0.973)	1010.0 (1.03)	3256.36 (1.80)
WATER SUPPLY & SANITATION (% of total)	11.0 (0.56)	74.0 (1.58)	105.7 (1.23)	102.7 (1.55)	458.9 (2.90)	1091.6 (2.76)	458.9 (3.76)	3922.0 (4.02)	6522.47 (3.62)
PROPORTION FAMILY PLANNING : HEALTH	.0015	.0156	.1102	.5021	.8286	.6464	.5311	.5546	.9597
% Change over previous Plan period :									
TOTAL PLAN	--	138.3	183.5	--	138.1	149.8	--	147.3	84.6
HEALTH	--	115.8	60.4	--	48.5	126.7	--	139.3	86.3
FAMILY PLANNING	--	2100.0	1031.8	--	1016.4	76.9	--	109.3	222.4
WATER	--	572.7	42.8	--	334.1	137.8	--	259.2	66.3

Source : Computed from GOI, DGHS, CBHI, Health Statistics of India 1984, (New Delhi: MOHFW, 1984), Table 4.1

The substantial achievement of the first Plan was in the launching of programmes to control communicable disease. Separate country-wide campaigns, supported by international agencies and techno-centric in approach, were launched against malaria, small-pox, tuberculosis, leprosy, filariasis, trachoma and cholera. The bulk of the health outlay in the first two plans was on these vertical programmes. Entire cadres of workers were trained for each programme; the National Malaria Eradication Programme (NMEP) alone required the training of 150,000 workers spread over its 400 units in the preventive and curative aspects of malaria control. (23).

The landmark of this Plan period having relevance for the extension of health services, was the establishment of the first Primary Health Centres (PHCs) in October 1952. (24) The PHC formed part of the broader strategy of rural development called the Community Development Programme (CDP) and the National Extension Services. In this form, it put into "practice the concept of community participation and intersectoral development for health care which had been recognised by the NPC sub-committee on National Health and the Bhore Committee even before Independence". (25)

A total of 725 PHCs were opened by the end of the plan period, though most of these were understaffed and ill-equipped. There were some 10,000 medical institutions of various types with 1,25,000 beds. Categories of health workers other than doctors continued to fall short of requirement (see Tables II and III). A number of institution for research & training in public health engineering were established to plan and man the water supply and sanitation programme, e.g. Central Public Health Engineering Organisaion and the Central Public Health Engineering Research Institute. The All India Institute of Medical Sciences (AIIMS), various research centres to study the major diseases and a few training centres for para-medical workers were also established.

The Second Five Year Plan (1956-61)

The Second Plan (26) allocated Rs. 143.0 crores to the health sector (140.8 crores for Health and 2.2 crores for Family Planning) out of a total outlay of Rs. 4,672 crores. The order of priorities were slightly different from that of the First Plan:

a. Establishment of institutional facilities to serve as bases from which health services could be rendered
b. Development of technical manpower through appropriate training programmes, and the employment of persons trained
c. As a first step in the improvement of public health the institution of measures to control communicable diseases which were widely prevalent in the country
d. An active campaign in environmental hygiene
e. Family planning and supportive programmes

The priorities reflected the awareness among the planners of the slow progress in establishing the rural health delivery system and of the need for augmenting the institutional facilities. Increasing the output of

---

(23) Banerji, 1985, pp. 24-25, and 81.

(24) P.R. Dutt, Rural Health Services in India: Primary Health Centres, 2nd Edition, (New Delhi: Central Health Education Bureau, 1965), cited in Ibid, p.25.

(25) Ibid, p.25.

(26) Government of India, Planning Commission, Second Five Year Plan, 1956-61, (New Delhi: Planning Commission, 1956).

Table II : ACHIEVEMENTS IN DIFFERENT PLAN PERIODS (MEDICAL & PUBLIC HEALTH

PLAN PERIOD	BEDS	MEDICAL COLLEGES	DENTAL COLLEGES	DOCTORS (ALLOPATHY)*	NURSES	ANMs
I Plan (1951-56)	125,000	42	7	65,000	18,500	12,780
II Plan (1956-61)	186,000	57	10	70,000	27,000	19,900
III Plan (1961-66)	240,000	87	13	86,000	45,000	22,000
IV Plan (1969-74)	282,000	105	15	138,000	88,000	54,000
V Plan (1974-79)	314,000	106	15	170,000	108,000	N.A.
VI Plan (1980-85)	500,628	106	25	271,598(a)	160,886(b)	86,520

Notes : * Estimate of the number of economically active doctors.

(a) Figure for 1982

(b) As on 31-12-83

Source : I - IV Plan : GOI, DGHS, CBHI, Pocket book of Health Statistics of India 1980, (New Delhi: MOHFW, 1980) Table 2.7.

VI Plan : GOI, DGHS, CBHI, 1984, Tables 8.1, 6.1, 6.4, 7.1, 7.3.

Table III : HEALTH SERVICES : 1950-1984

	HOSPITALS	DISPENSARIES	BEDS (a)		DOCTORS (allopathic) PER LAKH OF POPULATION
			('000)	PER LAKH OF POPULATION	
1950	2,717	6,891	112	31	16.5
1960	4,011	9,874	200	46	17.6
1970	4,239	10,508	326	60	25.8
1980	6,670(b)	15,968(b)	494(b)	74	38.2
1984	7,181	21,780	536	-	-

Notes : (a) Includes all types of beds in hospitals, dispensaries run by Government local bodies, private & voluntary organizations, etc.

(b) Relates to 1 January 1981.

Source : Cols 2-5 : CMIE, Standard of Living of the Indian People, (Bombay : CMIE, 1984), table 4.14

Col.6 : Ibid, Table 4.16

1984 figures : GOI, DGHS, CBHI, 1984, Tables 8.1 and 8.4.

health manpower was also emphasised. As doctors were reluctant to serve in rural areas or in Government PHCs, the plan stressed the need for training better and more medical auxiliaries. However the establishment of institutions for training auxiliary workers suffered from poor funding, as the major part of the outlay was proposed to be spent on new medical colleges, the completion of AIIMS, schemes for upgrading certain departments in medical colleges and for post-graduate training and research. The PHCs continued to be inadequately equipped and staffed.

Report of the Health Survey and Planning Committee, 1961 (Chairman: Sir Lakshmanaswami Mudaliar)

The Report of the Mudaliar Committee (27) analysed the progress in health conditions & health services in the 15 years following the submission of the Bhore Committee Report, and made recommendations about the future path of development of health services.

The report recorded the substantial achievements in controlling certain virulent epidemic diseases. Malaria was considered to be under control; a majority of units in the country were at the "surveillance" stage in the operations; and the motto of "eradication" was substituted by "control". Deaths from malaria, cholera, smallpox, etc. were halved or sharply reduced, and the overall morbidity and mortality rates had decreased. The death rate had fallen to 21.6 for the period 1956-61; the infant mortality rate was 135/1000, and the expectation of life at birth had risen to 42 years. These achievements reflected the investments of over Rs.2000 crores in health and the all-out mobilisation of resources against communicable diseases (See Table I(a)) Institutional facilities in the form of hospitals and dispensaries had increased from 9,608 in 1950 to 13,875 in 1960, and the number of hospital beds had increased from 112,000 to 200,000 (Table III). The Report however offered some revealing statistics; "Almost one-third of the total number of beds are to be found in the 12% teaching hospitals, 47% of the total number of beds are provided by 6.6% of the hospitals with 200 beds and above ....." (The vast majority of these were situated in urban areas). "Hospitals with a bed strength of less than 50 form over 70% of the total number of hospitals, and only 19% of the total beds are to be found in them". (28) The village and small town dwellers thus had the least access to institutions offering curative services.

The report admitted that basic health facilities had not reached at least half the nation. There were only 2,800 PHCs in operation by 1961. Instead of the "irreducible minimum in staff" recommended by the Bhore Committee, most PHCs were understaffed; large numbers of these were being run by the Auxiliary Nurse Midwife (ANM), or Public Health Nurse in-charge. The Secondary Health Centre Programme and the district hospitals were similarly lacking in facilities and staff. The committee recommended consolidation, rather than expansion, of the existing PHCs and their phased upgrading; strengthening the staffing; the norm of 40,000 population per PHC instead of 60,000; discontinuing the establishment of new PHCs in the absence of a full complement of staff, and the equipping of District Hospitals with "mobile clinics" for the treatment of non-PHC population. Nevertheless, the early 1960s witnessed a rapid increase in the number of PHCs.

---

(27) Government of India, Health Survey and Planning Committee (Mudaliar Committee), Report, Vol.I, (New Delhi: Manager of Publications, 1961).

(28) Ibid, p.73.

The Committee also suggested measures to improve the service conditions of doctors and other personnel in order to attract them towards rural services, and the expansion of facilities for training paramedical staff. It also insisted upon greater financial and other help from the central Government for "medical education".

The Third and Fourth Five Year Plans

The Third (1961-66) and the Fourth (1969-74) Plans acknowledged the poor progress of the PHC programme and recognised the need to strengthen it. The Third Plan (29) merits notice for suggesting a realistic solution to the problem of insufficient doctors for the rural service: "a ..... measure which is recommended is that a new short-term course, for the training of "medical assistants" should be instituted at an early date". (30) This cadre would be recruited locally, and trained in the PHCs. However it added the rider that, the trainees be given special facilities to obtain a full medical degree. This could only result in altering their aspirations and drawing them away from the rural areas.

While the Third Plan gave serious consideration to the need for more auxiliary personnel, no mention was made of any specific steps to reach this goal. Finally, for the first time, the importance of undertaking health education as a part of the social education programmes of the Community Development Blocks was recognised, and the Plan provided "increased facilities" for linking health and social education. The Fourth Plan (31), with regard to the PHC programme, took up the immediate objective of establishing "an effective machinery for the speedy construction of building, staff, drugs and equipment" - which was to become the Minimum Needs Programme. (32) It stressed the importance of curative and preventive health services in rural areas as a base for the maintenance phase of the communicable diseases control and eradication programmes.

Towards the end of the Fourth Plan, in February 1973, the Government announced its intentions of providing "specialised services" in medicine, surgery, obstetrics and gynaecology, in addition to the preventive and promotive health services already provided in the PHCs. This was a recognition of the fact that villagers preferred to approach the District Hospitals directly for treatment, as the PHCs lacked drugs, diagnostic and laboratory facilities, and were inadequately staffed. It noted that the full utilization of the bed-strength of most PHCs was correlated to the vigorousness of the family Planning activities, i.e. sterilizations and tubectomies in the areas. For the first time substantial amounts were allocated for the training of para-medical cadres (Rs. 12.93 crores); the Rs.100 crore shortfall in ultimate expenditure (33) raises serious questions about the gap between planning and implementation.

---

(29) Government of India, Planning Commission, Third Five Year Plan, 1961-66 (New Delhi: Planning Commission, 1961).

(30) Ibid, p.662.

(31) Government of India, Planning Commission, Fourth Five Year Plan 1974-79 (New Delhi: Planning Commission).

(32) Ibid, p. 390.

(33) Government of India, Planning Commission, Draft Fifth Five Year Plan 1974-79, Part II, Annexure III, (New Delhi: Planning Commission, 1974), p.249.

A further ten medical colleges were scheduled to be opened during the Plan Period, bringing the anticipated doctor: population ratio upto 1:5150 in 1968, compared to 1:6100 in 1961. This however had little meaning in the rural context, where a PHC with a maximum of two doctors served a population of nearly 1,20,000.

The Fifth Five Year Plan (1974-1979)

The Fifth Plan (34) acknowledged that the urban health structure had expanded at the cost of the rural, and this awareness guided its objectives:

a. To provide minimum public health services in the country through an integrated health, family planning and nutrition package
b. To increase accessibility of health services in rural areas
c. To correct regional imbalances
d. To develop referral services by improving district and sub-divisional hospitals
e. To intensify control and eradication of communicable diseases, particularly malaria and small-pox
f. To improve the quality of education and training of health personnel
g. To provide specialists' services in rural areas

The chief instruments for achieving these goals were the Minimum Needs Programme, the Multi-Purpose worker (MPW) Training Scheme, and the priority treatment of backward and tribal areas.

The Minimum Needs Programme was a package of inputs in the field of health, nutrition, environmental improvement and water supply, elementary and adult education, roads and electrification in rural areas and housing for landless labourers to meet the minimum needs of the poorest sections. It received a sizeable outlay of Rs. 291 crores, and the MPW training scheme received Rs.8 crores. In addition, the Plan targeted the opening of 101 PHCs, 11,036 sub-centres, and 1,293 rural hospitals.

In 1977, the Government introduced a major innovation in the nation's health strategy by launching a programme for training village-based health auxiliaries called the Community Health Volunteers (CHV) Scheme. The CHVs were part-time workers selected from the villages, and trained for three months in simple preventive and curative skills, both allopathic and indigenous. They were supervised by MPWs, and the programme was started in 777 selected PHCs where MPWs were already in place.

The Shrivastava Committee Report:

The CHV scheme was largely the recommendation of the Study Group on Medical Education and Support Manpower chaired by Shri. J.B.Shrivastava. (35) The Report pointed out that the "over-emphasis on provision of health services through professional staff under State control has been counter-productive. On the one hand, it is devaluing and destroying the old tradition of part-time, semi-professional workers which the community used to train. On the other hand, the new professional services provided under

---

(34) Government of India, Planning Commission, Fifth Five Year Plan 1974-79 (New Delhi: Planning Commission, 1974).

(35) Government of India, Group on Medical Education and Support Manpower (Shrivastava Committee), Health Services and Medical Education: A Programme for Immediate Action, (New Delhi: Ministry of Health & Family Planning, 1975).

state control are inadequate in quantity and unsatisfactory in quality"(36).

It therefore recommended the use of trained part-time health auxiliaries having accessibility to, and cultural kinship with, the community, as the first link in the health service chain. It had been observed that 90% of the community's curative and preventive health needs could be handled on the spot by paramedical workers. (37)

The Sixth Five Year Plan (1980-85)

The Sixth Plan (38) reflected certain changes in conceptual thinking regarding health care services. "There is serious dissatisfaction with the existing model of medical and health services with its emphasis on hospitals, specialisation, and super-specialization and highly trained doctors.... which is availed of mostly by the well-to-do classes. It is also realised that it is this model which is depriving the rural areas and the poor people of the benefits of good health and medical services". (39)

It emphasised the development of community based health system:

a. Provision of health services to the rural areas on a priority basis
b. The training of a large cadre of first-level health workers selected from the community and supervised by MPWs and Medical Officers of the PHCs.
No further linerar expansion of curative facilities in urban areas. This would be permitted only in exceptional cases dictated by real felt need or priority.

A significant feature of this plan was the sharp increase in outlay for the Minimum Needs Programmes and for rural health, both in terms of centrally sponsored schemes and other schemes. The allocation for communicable diseases was doubled, while the allocation for hospitals, dispensaries and medical education and research was less than in the Fifth Plan (40).

6. EVALUATION OF THE HEALTH SERVICES SYSTEM:

This historical survey has highlighted the failure of the health system to provide relevant and need-based services to the majority of the population. This phenomenon is the result of various processes at work, both overt and covert, in national decision-making.

(i) The Problem of Policy:

In 1983, the Parliament endorsed a National Health Policy committed to providing health facilities to all by the year 2000 AD. Prior to this, the Government lacked a clear and precise policy on the nation's health

---

(36) Ibid, p.7.

(37) K.S. Sanjivi, "Rational Approach to Community Health" The Hindu, December 23, 1975.

(38) Government of India, Planning Commission, Sixth Five Year Plan 1980-85 (New Delhi: Planning Commission, 1981).

(39) Government of India, Planning Commission, Draft Five Year Plan 1978-83, Vol.I (New Delhi:

(40) Banerji, 1985, p.41-42, and p. 367. See Table 4.4 on Sixth Plan Outlay and its distribution in comparison with the outlay for the fifth Plan, p. 43.

care system. Health Planning in the successive Five Year Plans has implied no more than varying financial allocation under certain heads. (41)

The single greatest problem of a weak policy has been the confusion of priorities within the health sector. This is evident from the continuous discussion regarding the curative - preventive - promotive 'mix'; the poor progress of primary services in comparison to the support and finance extended to urban-based secondary structures (42); and the heavy emphasis on individual communicable diseases programmes, without a parallel support for environmental hygiene and water supply programmes necessary for eradication, (43) and for PHCs and sub-centres necessary for maintaining the gains of these programmes. (44)

(ii) Resource Distribution:

The percentage outlay on health as a sector of development has declined with each Plan, from 3.3% on the First Plan to 2.9% in the Sixth Plan though the quantum investment has increased almost ten-fold in the same period (Rs. 65.3 crores in the First Plan to Rs. 2831.1 crores in the Sixth Plan).

It is the distribution of resources within the health sector, however, that requires critical assessment. In the first 15 years, inputs in large medical institutions, medical education and the communicable disease programmes far outweighed that in PHCs and in the training of para-medical workers. One well-trained multipurpose cadre fighting all the diseases in each Block or Taluka, organising the people as in the Chinese "four Pests" compaign, (45) would have yielded substantial results. As it is, there has been a resurgence of malaria; (46) tuberculosis remains the single largest killer accounting for nearly 11% of all registered mortality; (47) and the success of the smallpox campaign was more a result of the approach than of monetary investment. (48)

The fact that huge numbers of doctors were emigrating or turning into specialists and super-specialists for urban private pracxtice did not deter the planners from allocating large funds for medical education and colleges

---

(41) Ibid, p. 365.

(42) V. Djukanovic and E.P. Mach, Alternative Approaches to Meeting Basic Health Needs in Developing Countries, (Geneva: World Health Organization, 1975), p.15.

(43) World Bank, The Assault on World Poverty - Problems of Rural Development, Education and Health, (New York: World Bank, 1975), pp. 360-364.

(44) Banerji, 1974.

(45) V.W. Sidal and R. Sidal. "The Health Care Delivery System of the People's Republic of China" in K.W. Newell (ed), Health by the People, (Geneva: WHO, 1975), pp. 4-5.

(46) Centre for Monitoring Indian Economy (CMIE), Standard of Living of the Indian People, (Bombay: CMIE, 1977), p.18.

(47) S. Batliwala, "A Statistical Handbook of Health in India", Theme paper V for FRCH/ICSSR Workshop on Health Care, (Bombay), November 25-27, 1977(a), p.14.

(48) R.M. Basu, India's Victory over Smallpox, (New Delhi: Press Information Bureau, 1977), p.1.

dominated by the children of the elite.(49) India has a ratio of 2 doctors to 1 nurse, - a fact more reflective of our priorities than any other (50) The turn-out of all para-medical cadres has been low, largely due to the inadequacy of institutions for training such personnel in comparison to the growth of medical colleges.

The Government-run institutions have been guilty of wasteful utilisation of funds. For instance, the largest state-run hospital in the city of Bombay built a 12-bedded intensive Coronary Care Unit at a running cost of Rs. 300/- per day per bed. Its TB, Paediatrics, Obstetrics and Gynaecology and other wards have not been improved for over a decade (51). Heavy investment in urban areas has not necessarily improved the health facilities available to the poor city - dweller.

The lack of financial and human resource inputs in the most essential spheres of human development affects the people with the least economic and political power to rectify the situation; those below or just above the poverty line are the greatest victims of this anomaly. A rational system must address itself to this basic question of resource utilization before it attempts implementation. (52)

(iii) Organisational and Administrative Issues:

A host of organizational problems has contributed to the inefficiency of the health services. According to Banerji, "Increase in the domination of generalist administrators, liquidation of the IMS (Indian Medical Service) and failure to substitute it with an alternative cadre, and formation of several insular health serices cadres at the Union and State levels which are not conducive to formation of a cadre of managerial physicians to adequately shoulder the new types of responsibilities, are the major obstacles" (53) to making health services accessible to all.

Organizational problems have also been created by the policy of frequent transfers of health personnel promoting disinterest, apathy and lack of committment to the area they currently serve. The existence of dual or multiple controls at certain levels often leads to frustration and distrust, as for instance the PHC Medical officer - a specialist - being answerable to both the Block Development officer (BDO) who is a generalist, and the District Health Officer (DHO) who is a specialist - turned administrator. (54) The lack of a clear and efficient referral system, leading to the phenomenon of "by-passing" of the PHC and its doctor by the patient, mitigates confidence in the primary institutions and para-professionals, and over-loads the secondary institution which is meant to deal with special cases. The lack of supervision that goes along with a poor referral system, and the lack of meaningful interaction with higher level institutions and functionaries adds to the feeling of isolation that makes rural service unattractive. The doctors suffer from 'intellectual

---

(49) Banerji, 1985, See pp. 87-91 for analysis and evaluation of manpower development.

(50) Batliwala, 1977(a).

(51) S.Batliwala, "How Intensive is this Care?", Times of India, Bombay, January 2, 1977(b).

(52) Djukanovic and Mach, 1975, p.18.

(53) Banerji, 1985, p.52.

(54) Dubey and Murdia, 1978, p.140.

isolation' and the rest of staff do not get adequate support, encouragement and appreciation.

(iv) Lack of Community Involvement:

In a country of this size, health care can be made available to the population only if the latter participate and eventually assume responsibility for the planning and execution of primary health services in co-ordination with the Government health staff at the peripheral levels. (55) Countrary to this the people have not been encouraged to participate in most health programmes. (56) Services are delivered, and that too inadequately, to a passive population; these are not explained or interpreted to the recipients. People often lack awareness of the facilities available in their local health units; nor are they aware of what to expect from different health workers and therefore cannot demand services nor complain of negligence. (57) Greater participation would enable the people themeselves to supervise peripheral health workers and determine the priorities in planning according to their needs.

Officials often justify this situation with blanket accusations of 'ignorance', indifference and 'apathy' of the people - a palpably false claim in the light of studies such as Banerji's. (58) The lack of participation has led to a situation where the people are suspicious and estranged from the local health unit and staff, utilising their services only in the dire need. (59)

(v) Training and Value Orientation of Health Personnel:

The central problem in the training of health manpower is that it is not based on needs, disease-patterns and environmental and nutritional problems of the masses, but on a curricula derived from western models, or drawn up by 'experts' not necessarily conversant with situational realities. "By identifying itself with the highly expensive, urban and curative-oriented Western system of medicine, the ethos of medical education in India actively encourages physicians to look down on existing facilities within the country, particularly in rural areas. (60) The paramedical cadres are also trained in institutions far from the rural setting in which they will have to work. This only serves to alienate them from their rural origins.

---

(55) R. Kramer, Participation of the Poor - Comparative Community Study in the War in Poverty, (New York: Prentice-Hall, 1969).

(56) C.R. Krishnamurthy, "Planning for Primary Health Care", Paper Submitted at the FRCH/ICSSR Workshop on Health Care, Bombay, November 25-27, 1977.

(57) N.H. Antia and S. Batliwala, "Determining Manpower Needs", theme Paper VI for FRCH/ICSSR Workshop on Health Care, Bombay, November 25-27, 1977, p.6.

(58) Banerji, 1974, pp. 1340-41.

(59) Government of Maharashtra, Report of the Consultative Committee on Primary Health in Maharashtra State 1973-74, (Bombay: Government of Maharashtra, 1974).

(60) Banerji, 1985, p.88. See also D. Banerji, "Medical Profession and Social Orientation of Health Services in India", Seminar, 190, June 1975, pp. 13-16; Bhatia, 1973, pp.27-31.

7. NEED FOR EVOLVING A HEALTH POLICY: THE NATIONAL HEALTH POLICY

The National Health Policy of the Government of India (61) was endorsed by the Parliament in 1983. It presents an integrated Plan, based upon the salient findings of earlier committees and study groups set up by the Ministry of Health and Family Welfare, and other allied agencies, for the provision of comprehensive primary health care services. India's committment to the goal of "Health for All by the year 2000 AD" is reflected in the philosophy, approach, strategies and targets set by the Policy.

The Policy emphasises the need to restructure the existing health services according to the following broad approaches.

a. The provision of a well-dispersed net-work of comprehensive primary health care services, integrally linked with extension and health education approach, and drawing on the organised support of volunteers, auxiliaries, paramedics and adequately trained multipurpose workers.
b. Large-scale transfer of knowledge, simple skills and technologies to Health Volunteers selected by the communities and enjoying their confidence
c. The provision of organised back-up support through the establishment of a well worked-out referral system
d. The establishment of nation-wide chain of sanitary-cum-epidemiological stations providing an integrated package of services to eradicate/control diseases, besides tackling specific local environmental health problems
e. The utilisation of untapped resources through organised logistical, financial and technical support to voluntary agencies active in the health field
f. The establishment of centres equipped to provide speciality and super-speciality services, and their appropriate dispersal in order to remove existing regional imbalances
g. First priority to be accorded to providing services to people living in tribal, hill and backward areas, as well as to endemic disease affected populations and vulnerable sections

The policy states the need for a 'health team approach' to the development of health manpower; the need for planned efforts to integrate the functioning of indigenous practitioners of various systems – Ayurveda, Unani, Siddha, Homeopathy, Yoga and Naturopahy, – within the overall health care delivery system; and the need to secure the small family norm, through voluntary efforts, and move towards the goal of population stabilisation.

It draws urgent attention to evolving and implementing time bound strategies to tackle the problems of (a) malnutrition, (b) food adulteration and the quality of drugs, (c) water supply and sanitation, (d) pollution and environmental protection, (e) immunization, (f) maternal and child health and (g) occupational health.

It goes on to recommend the need for nation-wide public health education programmes, supplemented by nutrition and population education programmes; the strengthing of the technological and manufacturing

---

(61) Government of India, The National Health Policy, (New Delhi: Ministry of Family Welfare, 1984).

capability in the medical industry, particularly in the production of essential and life saving drugs and vaccines; the launching of state-wise health insurance schemes for mobilising the community's resources; and comprehensive health legislation. It also calls for the balanced development of basic, clinical and problem-oriented operational research in biomedical and allied sciences; and stresses the importance of inter-sectoral co-operation between health and related sectors like drugs and pharmaceuticals, food and agriculture, water supply and drainage, housing, education and social welfare, and rural development.

The policy statement ends with a set of goals for health and family welfare programmes. By the year 2000, it visualises a fall in infant mortality rate from the present 125 to below 60; in the crude death rate from around 14 to 9; in the maternal mortality rate from 4.5 to below 2; a rise in life expectancy at birth from 52.6 years for males and 51.76 years for females to 64 years for both the sexes; a fall in crude birth rate from around 35 to 21; and a net reproduction rate of 1.00 as against the current 1.48.

Paralleling the efforts at formulating a new policy on health, was the search for alternatives in the delivery of health care. In 1981, the ICMR-ICSSR Study Group on an Alternative Strategy for Health Services in India, consisting of prominant public health professionals and planners, was set up to formulate a strategy for providing health for all Indian people by A.D. 2000. The report stressed the need for simultaneous and complementary efforts in (i) Socio-economic-political transformation, (ii) family planning, and (iii) inter related fields like nutrition, environment and health education, for achieving better health conditions.(62)

8. THE SEVENTH FIVE YEAR PLAN 1985-90:

The Seventh Plan (63) has defined its objectives and formulated its major thrusts and strategies according to the statement on the National Health Policy. It also plans to carry forword the initiatives for the development of health care delivery system in the rural areas outlined in the Sixth Plan. The Minimum Needs Programme remains the basis for the promotion of rural health care. The preventive and promotive aspects of the health development programme have been stressed. The Plan emphasises the need to strengthen the rural health services through the consolidation of the health infrastructure; the strengthening of the three-tier system of sub-centres, Primary Health Centres (PHC's) and Community Health Centres (CHC's); the extension of the MPW Scheme with emphasis on training for attitudinal changes; the promotion of community participation; and the involvement of voluntary agencies in the delivery of health services. The total outlay for the Health Sector is Rs. 3392.89 crores.

---

(62) Indian Council of Social Science Research/Indian Council for Medical Research, Health for All: An Alternative Strategy, Report of a Study Group set up Jointly by ICSSR-ICMR, (New Delhi: ICSSR/ICMR, August 1980).

(63) Government of India, Planning Commission, The Seventh Five Year Plan 1985-90, Vol.II, (New Delhi: Planning Commission, October, 1985).

II

ORGANISATION OF HEALTH SERVICES AND MANPOWER DEVELOPEMENT

1. Introduction 19

2. Organisation of Health Services 19
   i. Union level
   ii. State level
   iii. District level
   iv. Rural Health Infrastructures + Personnel
   v. Institutional facilities for medical care

3. Health Manpower Development 26
   Physicians
   Dentists
   Pharmacists
   Practitioners of I S M & H
   Nursing personnel
   Para-medical workers with Primary Health Care system
   a. Multipurpose workers (MPW)scheme
   b. Community health worker/Health guide(HG)scheme
   c. Dais training programme

ORGANISATION OF HEALTH SERVICES AND MANPOWER DEVELOPMENT

1. INTRODUCTION

In the post Independence period, an elaborate system for the delivery of health care services has been built up in India. This system consists of the structure of health services organization, encompassing the Union, States, districts, and sub-district levels down to the village community, together with an extensive network of institutions for providing health services, for the training of health manpower, and for research.

This chapter is divided into two sections. Section I outlines the organizational structure of health services, while Section II gives details regarding the training and development of different categories of health manpower.

2. ORGANISATION OF HEALTH SERVICES

(1) Union Level

At the top of the hierarchical organisation of health services in India, are two advisory and policy formulating bodies - the Central Council of Health and the Central Family Welfare Council, headed by the Union Minister of Health and Family Welfare, and comprising all the State Health Ministers. The Union Minister is assisted by a generalist administrator from the Indian Administrative Service (IAS) with the rank of Secretary.

The Ministry has two departments - the Department of Health and the Department of Family Welfare, headed respectively by an Additional Secretary (HEALTH) and an Additional Secretary - cum - Commissioner (Family Welfare) (1). The Department of Health deals with medical and public health matters, including drug control (not production, which is under the Ministry of Petroleum and Fertilizers) and the prevention of food adulteration. A number of generalist administrators with ranks of Joint Secretaries, Deputy and Under Secretaries, Directors, etc., assist the Secretary. The technical wing for health services, which provides specialist expertise to the Health Department, is known as the Directorate-General of Health Services (DGHS). It is an "attached office" of the Ministry and is headed by the Director-General of Health Services.

The Director-General, assisted by two Additional Directors General, (ADG's), several Deputy (DDGs) and Assistant Directors General (Ass.D.Gs) and other specialist opfficers, provides expertise in the field of national programmes for control of communicable diseases, expanded programme on immunization, rural health services, health education, health manpower development and medical education, health planning and intelligence, drugs control, hospitals and medical care activities and the administration of medical store depots. The DGHS has three bureaus - the Bureau of Health Planning, the Central Bureau of Health Intelligence (CBHI) and the Central Health Education Bureau (CHEB) (2).

---

(1) Government of India, Annual Report 1984-85, (New Delhi: Ministry of Health and Family Welfare, 1985), pp. 2-3.

(2) GOI, MOHFW, 1985, Annexure IV.

The national institutes dealing with health problems, such as the All India Institute of Hygiene and Public Health (AIIHPH), Calcutta, the National Institute of Communicable Diseases (NICD), New Delhi, the National Tuberculosis Institute (NTI), Bangalore, Jawahar Institute of Post-graduate Medical Education and Research, (JIPMER) Pondycherry and others, also come under the DGHS and the Ministry of Health and Family Welfare (3).

However certain health services have been shifted to other departments and Ministries from the DGHS. Family planning and MCH Services were shifted in 1960 to the Department of Family Planning (now Family Welfare); public health engineering & municipal administration to the Ministry of Works and Housing; policy formulation, planning, programming, implementation and evaluation of Nutrition programmes to the Department of Social Welfare, with the DGHS only acting as a technical advisory group; the administration of iron & folic acid, food supplements and Vitamin A to the Department of Family Welfare; and the administration of Indigenous Systems of Medicine and Homeopathy to the Department of Health. (4)

(ii) State Level

Health is a State subject under the Constitution, and the responsibility for providing health services lies with a State's Department of Health and Family Welfare. The Department is headed by a Minister of Cabinet rank; an IAS Officer, who functions as Secretary, is in charge of administration.

Similar to the DGHS at the centre there are State Directorates of Health and Family Welfare, each headed by a Director Health Services. Below him are Additional, Joint, Deputy and Assistant Directors for individual programmes in the field of each communicable diseases control programme, vaccine production, EPI, nutrition, MCH, nursing, health education, laboratory services etc. Each State Directorate has a Family Welfare Bureau headed by an Additional Director (FW), to oversee programme implementation. (5)

A senior officer in the Directorate oversees the district level health administration, which in turn is reponsible for health services in rural areas. In Maharashtra, as in other large States, a number of districts have been combined to form circles; the health services at the Circle level are headed by a Deputy Director of Health Services.

The State Directorates oversee the functioning of the Municipal health departments, which in turn are responsible for providing health services to urban populations. There are also State financed hospitals and health institutions which supplement the work of Municipalities. (6)

---

(3) GOI, MOHFW, 1985.

(4) Banerji, Health and Family Planning Services in India, (New Delhi: Lok Paksha, 1985), p.48.

(5) See S.L. Goel, Public Health Administration, (New Delhi : Sterling Publishers Pvt. Ltd., 1984), pp. 295 - 317, for a description of health services organisation in Punjab.

(6) Banerji, 1985, p.50.

(iii) District Level

The health services organisation varies somewhat from State to State. In certain States the health organisation of the district is under the overall control of the Chief Medical Officer (CMO) (7). He is assisted by district level personnel - District Health Officer (DHO), District Family Welfare Officer (DFMO), Superintendent for the district hospital and other specialist medical officers in charge of Malaria, Leprosy, T.B. and other programmes.

In other states, the post of CMO has been bifurcated with the Civil Surgeon in charge of District Hospital, the taluka-level or cottage hospitals and so on, and the District Health Officer (DHO) in charge of the Rural Health Services and Primary Health Centres, as well as the Rural Family Welfare Centres and MCH Services. In some States there is a separate post of District Family Welfare Officer (DFWO).

The district has a net-work of health institutions, including civil hospitals, rural or cottage hospitals, civil dispensaries, Ayurvedic dispensaries, rural dispensaries, TB clinic, Primary Health Centres and Sub-centres and Family Welfare Bureaux.

(iv) Rural Health Infrastructure, Services and Personnel

The Primary Health Centre (PHC) is the core institution of the rural health services infrastructure in India. The first PHCs were established in October 1952, as a part of the Community Development Programme (CDP). The CDP represented the official strategy for integrated rural development initated in the First Five Year Plan. The concept of rural health services delivery through the PHCs, was in line with the recommendations of the Bhore Committee (1946) and the NPC Sub-Committee on National Health.

The majority of PHCs were established by the mid-60ties (Table I). Each PHC was intended to serve one community development block, or a population of 100,000, and was to be staffed by a medical officer (MO), a sanitary Inspector (SI), a lady health visitor (LHV), a compounder and a number of auxiliary-nurse midwives (ANMs). The PHC staff was expanded with the launching of the national campaigns against individual communicable diseases in the early 60 ties, and the strengthening of the Family Planning Programme. The typical staffing pattern included, besides the above - mentioned personnel, a large number of unit purpose workers, such as Basic Health Workers (BHWs), Malaria Inspector, Laboratory Technician belonging to the Malaria programme; Enumerator, vaccinators and assistants belonging to the small pox campaign; BCG vaccinators from the Tuberculosis programme, and so on (see Chart I for pre-MPW Scheme Staffing pattern). However throughout the sixties, the rural health programme suffered from shortages of PHC personnel, PHC building and staff quarters, equipment and inadequate training facilities.

In the early sixties sub-centres began to be established, each serving a population of 10,000 and staffed by an Auxiliary Nurse Midwife (ANMs), a Male Health Assistant (FP), and some Basic Health Workers (BHWs) & other field workers belonging to the national programmes (See Chart I for Pre-MPW staffing pattern). Each PHC was a referral point for 8-10 Sub-centres.

---

(7) For example, the State of Haryana.
See Ashish Bose & R.P. Tyagi, "Rural Health Services: Present Status", in A. Bose & P.B. Desai (ed) Studies in Social Dynamics of Primary Health Care, (Delhi: Hindustan Publishing corporation (India), 1983), p.115.

Chart I : DISTRICT & RURAL HEALTH SERVICES : ORGANIZATION & STAFFING PATTERN

UNIT	POPULATION COVERED	INSTITUTIONAL FACILITY/IES	STAFFING	
District	1 to 3 million	CIVIL/GENERAL HOSPITALS DISPENSARIES (CIVIL, AYURVEDIC, & RURAL) T.B. CLINIC FAMILY WELFARE BUREAU	CIVIL HOSPITAL STAFF Civil Surgeon Senior Medical Officer Specialists (Medical, Surgical, Eye & ENT Radiologist, Anaesthetist, Pathologist, Paediatrician etc) Para-Medical Staff Pharmacists Nurses Administrative Staff	
Sub-District, Taluka/Tehsil	100,000 i.e. per 1 Community Development Block	UPGRADED PRIMARY HEALTH CENTRE/ COMMUNITY HEALTH CENTRE (CHC) (38-Bed hospital)	4 Specialists (Surgeon, Physician, Obstetrician & Gynaecologist, Paediatrician). 3 General Duty Medical Officers (Public health, anaesthesia, Indian systems of Medicine) 1 X-ray Technician 1 Extension Educated 1 Opthalmic Assistant 1 Statistical Assistant 16 Ward Staff 10 Supporting Staff.	
	1 PHC per 30,000 Population or 1 per 20,000 in hilly & tribal areas. (Upto 1979-80, 1 PHC per 80,000 to 100,000 population i.e. per CD Block)	SUBSIDIARY HEALTH CENTRES/ NEW PRIMARY HEALTH CENTRES/ (Strengthened RURAL DISPENSARIES) PRIMARY HEALTH CENTRES (PHC)	STAFFING (MPW Scheme) 2-3 Medical Officers (MOs) M O - in charge M O (MCH/FW) M O (Ayurved/ISM) 1 Health Assistant (Male) 1 Health Assistant (Female) Block Extension Educator (BEE) Female Health Workers (FHWs)/ Auxiliary Nurse Medwives (ANMs)	STAFFING (Pre-MPW Scheme) Health Inspector (Supervising Basic Health workers) Sanitary Inspector (Supervising Vaccinators and overseeing environmental hygiene) Male Family Planning Workers. Public Health Nurse (PHN) Lady Health Visitor (LHV)

(Cont.)

(Contd.)

Chart I : DISTRICT & RURAL HEALTH SERVICES : ORGANIZATION & STAFFING PATTERN

UNIT	POPULATION COVERED	INSTITUTIONAL FACILITY/IES	STAFFING		STAFFING (Pre-MPW Scheme)
			STAFFING (MPW Scheme)		
				Computer Store-keeper Driver Ancilliary Staff Female Attendant	
	1 per 5,000 population or 1 per 3,000 in hilly & tribal areas (Upto 1980 1 per 10,000 population)	SUB-CENTRE	1	Health Worker (Male)	Health Assistant (FP) Basic Health Workers (BHWs) Enumerators Vaccinators Health Inspectors
			1	Health Worker (Female)	Auxiliary Nurse Midwife (ANM)
Village/s	per 1,000 population.	(COMMUNITY HEALTH WORKER SCHEME)	1	Health Guide (HG) (Community Health Worker (CHW)/ Community Health Volunteer (CHV)) Retrained Dai	

SOURCE: 1. For the structure of a civil hospital, see Goel, 1984, p. 392.

2. For the staffing pattern of the PHC & below, see H. Dhillon, S. Das Gupta, M.K. Krishna Menon & P.M. Shah, Handbook for the Delivery of Care To Mothers and Children in a C D Block, (Delhi: Oxford University Press, 1983).

3. For the pre - MPW staffing pattern see Ibid; Bose & Desai, 1983, p. 107.

4. For the modified health organization & the revised norms, see Government of India, Annual Report 1984-85, (New Delhi : Ministry of Health & Family Welfare, 1985).

Table I : ESTABLISHMENT OF PRIMARY HEALTH CENTRES AND SUB-CENTRES SINCE THE FIRST PLAN.

PLAN PERIOD	PHCs	SUB-CENTRES
First Plan	725	
Second Plan	2,565	
Third Plan	4,631	
Inter-Plan Period (3 years)		
As on 31-3-1967	4,793	17,521
As on 31-3-1968	4,946	21,539
As on 31-3-1969	4,919	22,826
Fourth Plan Period		
As on 31-3-1974	5,283	33,509
Fifth Plan Period		
As on 31-3-1978	5,400	38,115
Sixth Plan Period		
As on 31-3-1984	7,210	74,307

Source: GOI, DGHS, CBHI, Health Statistics of India 1984 (New Delhi: MOHFW, 1984), Table 9.1.

The Present Structure of Rural Health Services

From the Fifth Plan (1974-79)onwards, the rural health care delivery system was made a part of the Minimum Needs Programme (MNP) in order to ensure increased accessibility to health services in the rural area, correction of regional imbalances in health services, further development of referral services by removing deficiences in district and sub-divisional hospitals, intensification of control/eradication of communicable diseases, qualitative improvement in tbe education and training of health personnel, and development of referral services through provision of specialist care in rural areas. (8) The plan also intitiated the Multi-purpose Workers (MPW) Scheme to retrain unit-purpose para-medical personnel, with the objective of integrating their functions in a single worker. In October 1977 the Community Health Worker (CHW) Scheme, presently known as the Health Guide (HG) Scheme, was launched to further decentralise the delivery of health care services. (9)

The report (1980) of the expert Study Group, set up jointly by the ICSSR/ICMR, proposed an alternative model for the organisation of rural health services. (10) The Working Group of the Planning Commission, set up to work out a detailed strategy for attaining the goal of Health for All by 2000 A.D., made recommendations similar to the ICSSR/ICMR report. The Sixth Plan (1980-85) adopted the revised norms for the rural health care infrastructure. (11)

(8) Government of India, Planning Commission, Draft fifth Five Year Plan 1974-79, Vol. II, (New Delhi: Planning Commission, 1974), p.234.

(9) For further details regarding the MPW & CHW Schemes, see the next Section on Health Manpower Development.

(10) Indian Council of Social Science Research, Health For All - An Alternative Strategy, (Pune: Indian Institute of Education, 1981), pp.81-127.

(11) Government of India, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi: Planning Commission, 1981), pp. 368-369.

The Plan envisages the setting up of a 30-bedded rural hospital known as the Community Health Centre (CHC), (12) covering a population of 1 lakh. The earlier policy regarding the CHC was one of upgrading one out of ever 4 PHCs into a rural hospital. The new CHCs are to provide mainly specialised curative services in gynaecology, paediatrics, surgery and medicine, as is demonstrated by its staff pattern (Chart I).

The Primary Health Centre (PHC) now gives coverage to 30,000 rural population, or 20,000 in hilly and tribal areas. An average, health team at the PHC consists of 2 to 3 physicians known as Medical Officers (MOs), including the MO in-overall charge of the PHC and one trained in an Indian system of Medicine (ISM); one male Health Assistant (HA (m)) and one female Health Assistant (HA(f)), both of whom are multi-purpose personnel providing the link between health workers at the sub-centre/ village level and the physicians; a Block Extension Educator (BEE), a number of female Health Workers (HWs(f))/Auxiliary Nurse Midwifes (ANMs) giving nursing care to out-patients and admitted patients; a laboratory Technician; a Computor or statistician; driver for the PHC transport, Store-keeper and other ancillary staff and attendants (Chart I).

The PHC has a net-work of Sub-centres, each serving a population of 5,000 as per the revised norms. It is manned by a team of one male multipurpose Health Worker (HW (m)) and one female multipurpose Health Worker (HW (f)). The Female Health Worker, the new designation under the MPW Scheme for the earlier Auxiliary Nurse Midwife (ANM), provides maternal and child health (MCH) and family planning services to women. MCH services comprise registration of women for ante-natal and post-natal care; distribution of iron and folic acid tablets to pregnant women; deliveries; advice on diet; immunization of infants and children with BCG, polio, Tetanus Toxoid, Diphtheria, Pertusis and anti-Typhoid vaccines; distribution of Vitamin A and treatment of minor ailments. Family planning includes motivation, contraception advice and follow-up.

The Male Health Worker is expected to prepare and maintain a register of vital events and of eligible couples; undertake family planning advice, and motivation and the distribution Nirodh among men;undertake house-to-house malaria surveillance; immunization etc.

Each village, or population of 1,000, is to have a community health worker known as the Health Guide (HG). The Health Guide is a volunteer chosen by the community, is a women as per the new norms, and is often drawn from the ranks of a traditional healer or medical practitioner, a dai, or a school teacher. The HG's functions include encouraging acceptance of neo-natal care and immunization; use of weight-charts for children upto age of 6 years; nutrition; health education related to hygiene and infectious diseases; the chlorination of wells; sanitation; simple curative care; identification of pregnant women and children at risk; and collection of information on births, deaths, eligible couples, etc.

The PHC is the referal point for emergency cases and complications. To reduce work-load due to large population, additional PHC's are to be raised. The Sixth Plan envisaged the setting up of New PHC's, and Subsidiary Health Centres for ever 30,000 population by strengthening the already existing rural dispensaries.

Apart from the CHC's, PHC's and rural dispensaries, hospital facilities for the rural population are available at the taluka/district/metropolitan

---

(12) Ibid.

general hospitals, and specialist facilities are available at the post-graduate medical Institutions.

Between 1980-84, 258 CHC's were established bringing the total to 475 centres. In the same period 1,558 SHC/New PHCs were established, bringing the total number of functioning SHCs to 7,126 (13). By March 1984, 7,210 PHC's were established and functioning in the country, while the figure for sub-centres was 74,307 (Table I).

(V) Institutional Facilities for Medical Care

Hospitals

According to the 1984 estimates there are 7,181 hospitals in India (including both public and private) with a total capacity of 500,628 beds. The urban orientation of medical services is evident from the fact that 74 per cent of the hospitals and 86 per cent of bed capacity are located in urban areas, although 70 per cent of the Indian population is rural. Kerala's hospital & bed strengths are the best among the states, where as large & populated states like Madhya Pradesh, Bihar, Orissa & Uttar Pradesh have a high population - bed ratio (Table II).

There are various categories of hospitals, with the teaching -cum research hospitals at the top. These are the All-India Institute of Medical Sciences, New Delhi, Post-Graduate Medical Education & Research Institute, Chandigarh, Jawahar Institute of Post-graduate Medical Education & Research, Pondicherry and All India Institute of Hygiene & Public Health, Calcutta. There are hospitals attached to colleges, big general hospitals (200-300 bed strength) in metropolitan cities, district hospitals (50-200 bed strength) at district headquarters, and hospitals at taluka/tehsil level (20-50 bed strength). The Upgraded Primary Health Centre/Community Health Centre is a 30-bed hospital.

There are 3,256 hospitals run by private and voluntary organizations (1984 estimates), as against 3,540 by the Government, and 38.5 by local bodies. The former are mainly concentrated in Maharashtra (869 hospitals) Gujarat (733) and Kerala (606, 1979 estimate). (14)

Dispensaries

Curative services are also provided through 8,837 urban out-patient dispensarieshaving a total strength of 10,465 beds 3, and through 12,943 rural dispensaries with a total strength of 25,277 beds (15). Some 6,438 dispensaries (5,306 bed strength) out of a total of 21, 780 are in the private and voluntary sector and are largely concentrated in Maharashtra and Gujarat (16).

3. HEALTH MANPOWER DEVELOPMENT

An important component of the health programme is medical education, and the training and development of different categories of personnel

---

(13) GOI, MOHFW, 1985, p.131.

(14) GOI, DGHS, CBHI, 1984, Table 8.2.

(15) GOI, DGHS, CBHI, 1984, Table 8.4.

(16) GOI, DGHS, CBHI, 1984, Table 8.5.

Table II : NUMBER OF HOSPITALS AND BEDS ACCORDING TO RURAL/URBAN(1.1.1984)

State/UT	RURAL		URBAN		TOTAL	
	Hosp.	Beds	Hosp.	Beds	HOSP.	Beds -
Andhra Pradesh	163	3691	448	32039	611	35730
Assam	38	2207	73	7438	111	9645
Bihar	19	589	207	21985	226	22574
Gujarat	76	3096	838	30975	914	34071
Haryana	8	422	79	6989	87	7411
Himachal Pradesh	26	961	39	3009	65	3970
Jammu & Kashmir	2	60	33	3883	35	3943
Karnataka	47	2778	186	27690	223	30468
Kerala (1.1.79)	595	21635	163	21443	758	43078
Madhya Pradesh	43	751	223	16348	276	17099
Maharashtra	159	6835	1115	74897	1274	81732
Manipur	12	367	9	899	21	1266
Meghalaya	1	30	10	1975	11	2005
Nagaland	29	584	6	528	35	1112
Orissa (1.1.83)	145	2327	162	9255	307	11582
Punjab	111	3169	145	11158	256	14327
Rajasthan	23	1072	207	17026	230	18098
Sikkim	4	225	1	252	5	477
Tamil Nadu (1.1.82)	97	3695	279	36920	376	40615
Tripura	4	125	12	1110	16	1235
Uttar Pradesh	74	2493	641	43660	715	46153
West Bengal	146	9993	258	40969	404	50162
A & N Islands	10	324	1	363	11	687
Arunachal Pradesh	15	474	7	534	22	1008
Chandigarh (1.1.83)	-	-	2	1120	2	1120
D & N Haveli	1	50	-	-	1	50
Delhi	2	62	64	14442	66	14504
Goa, Daman & Diu	38	822	51	2535	89	3357
Lakshdweep	2	50	-	-	2	50
Mizoram	4	146	8	707	12	853
Pondycherry	-	-	10	2246	10	2246
TOTAL	1894	68233	5287	432395	7181	500628

Source : GOI, DGHS, CBHI, Health Statistics of India 1984, (New Delhi: MOHFW, 1974), Table 8.1

involved in the delivery of health care services. Health personnel have traditionally been classified into the following four categories:

1. Core health personnel such as physicians;
2. Para-medical professionals - clinical psychologists, nurses, health economists etc.;
3. Para-medical technicians - X-ray Technicians, Laboratory Technicians, occupational therapists;
4. Para-medical assistants. In the Indian context these refer to the Multi-purpose Health Workers, Auxiliary Nurse Midwives, Health Guides and so on.

This section provides data on several important categories of health workers in the Indian health programme. It also gives details of several Government Schemes for the training and re-orientation of para-medical assistants that aim at improving the out reach of health care services to the vast rural population.

Table III shows the present strength of health manpower in India. In all, there are 1,914,387 functionaries (1984-85) working in the field.

Table III : HEALTH MANPOWER IN INDIA

(a)	Number of allopathic Doctors (1984) (registered with State Medical Councils.)	2,97,228
(b)	Registered Dentists (1984)	8,725
(c)	Registered Nurses (all categories) upto 31.12.1983	4,25,399
	((i) Nurses	1,64,421)
	((ii) ANM's	1,63,927)
	((iii) Midwives	85,630)
	((iv) Health Visitors	11,421)
(d)	Registered practitioners of Indian Systems of Medicine & Homeopathy (upto 1.1.1983)	3,87,218
	((i) Ayurveda	2,32,190)
	((ii) Unani	27,736)
	((iii) Sidha	11,476)
	((iv) Naturopathy	106)
	((v) Homeopathy	1,15,710)
(e)	Community Health Workers/ Health Guides (upto 31.3.85)	3,70,418
(f)	Dais (upto March '85)	4,25,399
	Total...	19,14,387

Source : GOI, DGHS, CBHI, Health Statistics of India 1985, (New Delhi: MOHFW, 1985), Tables 7.1, 7.2, 7.3, 15.2, 7.6, 7.9 respectively.

Physicians

In 1984 there were 2,97,228 registered physicians in the country (Table III). An important aspect of manpower development and medical education in India, has been the promotion of modern allopathic medicine. This is evident from the rapid growth of medical colleges offering M.B.B.S. degree. Their number rose from 25 in 1947 to 106 in 1981 (Table IV); the 100 medical Colleges from where information is available, have an admission capacity of 10,818 seats. However the total admission capacity is estimated to be over 13,000 seats. (17)

Table IV : NUMBER OF STUDENTS ADMITTED IN FIRST YEAR M.B.B.S. COURSE AND QUALIFIED FINAL M.B.B.S. IN INDIA IN SELECTED ACADEMIC YEARS.

YEAR	TOTAL NO. OF MEDICAL COLLEGES.	NUMBER OF STUDENTS	
		ADMITTED	QUALIFIED
1947-48	25	1,983	959
1950-51	28	2,675	1,557
1960-61	60	5,874	3,387
1970-71	95	12,029	10,407
1980-81	106	11,101*	12,170**
1983-84	106	10,818*	N.R.

N.R. = Not Received.

Note : * Data not received from 6 medical colleges in 1982-83 and 1983-84.

** Data not received from 6 medical colleges in 1981-82 and 7 in 1982-83.

Source : GOI, DGHS, CBHI, 1985, Table 6.1.

However, the share of different States in the distribution of medical colleges is very uneven. This is demonstrated by the number of admissions per lakh (100,000) population, which range from 2.73 per lakh for Karnataka to 0.96 per lakh for Uttar Pradesh (Table V). According to Banerji, "This differential coverage has wide implications, quite apart from the production of physicians. The attached hospital of a medical college makes available a high quality of medical care to the local population. Correspondingly, most facilities for post-graduate medical education are also concentrated in States which have a high ratio of admission in medical colleges. Distribution of medical colleges thus provides an important indicator of disparaties in terms of health institutions and health manpower". (18)

Medical education has also been characterised by an increasing orientation towards specializations and super specializations in the curative field, as demonstrated by the expansion of post-graduate education. The admission capacity for the MD course is 2,584 (1978-79), and for the post-graduate diploma course is 3,197. (19)

---

(17) GOI, DGHS, CBHI, Pocketbook of Health Statistics of India 1980, (New Delhi: Ministry of Health & Family Welfare, 1980), Table 27.

(18) Banerji, 1985, p.57.

(19) GOI, DGHS, CBHI, 1981, Table 6.4.

Table V : POPULATION COVERAGE OF MEDICAL COLLEGES (MBBS) IN INDIA 1980-81.

States/Union Territories	No. of Medical Colleges	No. of Students Admitted (1st Yr.)1980-81	No.of Admissions per one lakh (100,000) population	Entitlement of Medical Colleges*
Andhra Pradesh	8	911	1.71	11
Assam	3	+	+	4
Bihar	9	531	0.76	14
Gujarat	5	659	1.94	7
Haryana	1	124	0.96	3
Himachal Pradesh	1	66	1.56	1
Jammu & Kashmir	2	141	2.36	1
Karnataka	9	1013	2.73	7
Kerala	4	586	2.31	5
Madhya Pradesh	6	509	0.98	10
Maharashtra	13	1468	2.34	13
Orissa	3	75	0.29	5
Punjab	5	300	1.80	3
Rajasthan	5	460	1.35	7
Tamil Nadu	9	566	1.17	10
Uttar Pradesh	9	1074	0.96	22
West Bengal	7	915	1.68	11
Delhi	4	763	12.31	1
Goa, Daman, Diu	1	461	42.69	-
Pondicherry	1	70	11.48	-
Other UTs.	1	135	1.92	1

N. A. : not available. * The norm set by the Bhore Committee was 1:50 lakhs.
Source : GOI, DGHS, CBHI, Health Statistics of India 1981. (New Delhi: MOHFW, 1981, Table 6.3

There is no sign of controlling the intake of these institutions. On the one hand there is growing unemployment among physicians, and on the other, this rapid expansion has made little impact on the public health care system, and the health services in the rural areas. This assessment is contained in the reports of successive official committees and Study-Group. (20) The Sixth Plan admits, (21) "There has been pre-occupation with the promotion of curative and clinical services through city-based hospitals which have by and large catered to certain sections of the urban population. ....The concept of health in its totality with preventive and promotive health care services in addition to the curative, is still to be made operational. Doctors and para-medicals are reluctant to serve in the rural areas. They are generally city oriented and their training is not adequately adapted to the needs of the rural areas particularly in the field of preventive and promotive health".

Upgraded departments of preventive and social medicine were established in medical colleges, many with facilities for post-graduate education, to provide a social reorientation to the education and training of health workers. However, these remain among the least favoured departments in terms of funding, authority or prestige. (22)

The proliferation of specializations at variance with the social conditions in the country, has led to the export of medical personnel to the industrialised countries of the West, and more recently, to the oil producing countries. According to one estimate, almost 13 per cent of the total number of medical personnel educated in India have settled abroad. (23).

The flourishing private sector is largely concentrated in the urban areas. In the rural areas, private practice is carried out chiefly by Registered Medical Practitioners (RMPs), usually belonging to the local community. The overproduction of allopathics doctors resulting in skill competition in urban areas has compelled many to settle in rural places. This together with lack of even the minimal health infrastructuralsupport, make their presence less useful than generally surmized, and often leads to unnecessary and excessive medication.

The Sixth Plan (1980-85), besides stating the necessity of re-orienting medical education to meet the requirements of rural areas, also proposed to encourage private practitioners to settle in rural areas as a supplement to the Government health services. Besides the scheme launched by nationalised banks to provide financial assistance to professionals, including doctors, for self-employment, the Plan also cites the examples of the schemes to

---

(20) Government of India, Group on Medical Education and Support Manpower (Shrivastav Committee), Health Services and Medical Education: A Programme for Immediate Action, (New Delhi: Ministry of Health and Family Planning, 1975) pp. 38-39; GOI, Draft Sixth Five Year Plan 1978-83 (Revised), (New Delhi: Planning Commission, 1979), p. 431; Indian Council of Social Science Research and Indian Council of Medical Research, Health for All: An Alternative Strategy : Report of a Study Group Set Up Jointly by ICSSR and ICMR, (Pune: Indian Institute of Education, 1981), p. 159-59.

(21) Government of India, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi: Planning Commission, 1981), p.367..

(22) S.S. Jha, "How to make our Doctors more Relevant", Science Today, December 1981.

(23) A. Bose, "Evolution of Health Policy in India". In Bose and Desai (eds.), 1983, p.34.

encourage part-time service from private practitioners and voluntary agencies at the sub-centre and village levels, initiated by Tamil Nadu and Andhra Pradesh. (24)

The representation of women in medical teaching institutions is poor, with the exception of the Obstetrics and Gynaecology departments. The number of female doctors is below that of male doctors (Table VI).

Table VI: NUMBER OF DOCTORS BY SEX AND QUALIFICATIONS REGISTERED WITH THE IMC UPTO 1979.

GRADUATES		LICENTIATES		TOTAL	
MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
1,60,297	53,259	53,259	2,935	1,94,687	46,194

GRAND TOTAL - 2,40,881

Note : Information for Karnataka Council is for 1978. Data are from 17 state medical councils.

Source : Medical Council of India, as cited in GOI, Handbook on Social Welfare Statistics 1981, (New Delhi:1982), Tables 3.3 & 3.4.

Dentists

The number of dentists registered with the Dental Council of India in 1984 was 8,725 (Table III),having risen from 3,290 in 1951 (25). By 1983-84 there were 25 dental colleges with a total annual admission capacity of 831 seats (26).

Pharmacists

The number of pharmacists registered with the State Pharmacy Councils was 16,046 as on 31.3.82. (27)

Practitioners of Indian Systems of Medicine (ISM) & Homeopathy (H).

Upto January 1983, there were a total of 3,87, 218 registered practitioner of the Indigenous (traditional) Systems of Medicines & Homeopathy (ISM & H) in India (Table III). These included 2,32,190 practitioners of Ayurveda, 27,736 practitioners of Unani, 11,476 practitioners of Sidha, 106 practitioners of Naturopathy and 1,15,710 practitioners of Homeopathy. (28)

(24) GOI, Planning Commission, 1981, p. 371.

(25) GOI, DGHS, CBHI, 1985, Table 7.2.

(26) Ibid, Table 6.4.

(27) Ibid, Table 7.17.

(28) For details of ISM & H, see the Chapter on Indian Systems of Medicine & Homeopathy in this volume.

Nursing Personnel:

Upto 31st December 1983, there were a total of 425,399 nurses of all categories registered with the State Nursing Councils (Table II). Degree/Diploma/Certificate - level training in General Nursing is offered by 320 institutions with an annual admission capacity of over 7,342 seats (Table VII).

The annual out-turn of Nurses rose from 1,282 in 1950 to 7,342 in 1983. (29)

Para-Medical Workers with the Primary Health Care System

Since Independence, a large number of training institutions for the development of different categories of para-medical workers/ auxiliary health workers have been established. Table VI provides data on certain categories of para-medical courses and training facilities functioning in 1983.

This section presents data on para-medical workers directly involved in the delivery of primary health care, and on the schemes to re-orient their training.

(a) Multipurpose Workers (MPW) Scheme

Throughout the sixties, the delivery of health services was done by a large range of special unit purpose health workers. Besides the Basic Health Workers, there were health workers belonging to each of the National Communicable Diseases Programme (See Chart I). In 1963, the Chadha Committee report (30) recommended the integration of health and family planning services, and its delivery through one male and one female multipurpose worker per 10,000 population. However the recommendation remained unimplemented.

In 1973, the report of the Kartar Singh Committee (31) once again criticised the separation of functions, and the poor coordination among health workers posted with the PHCs. It recommended the replacement of Auxiliary Nurse Midwives (ANMs) by multipurpose Female Health Workers (FHWs), each serving a population of 10,000 to 12,000, and the development of multi-purpose Male Health Workers (MHWs) per 5,000 population.

The Multipurpose Workers (MPW) Scheme was launched in 1972, with the objective of re-training the existing cadres of uni-purpose workers, and the training of new MPWs to meet the requirements of the expanding primary health care system. It was hoped to complete the retraining component by the end of the Sixth plan period. By the end of January 1985, retraining had been completed in 355 districts out of a total of 412, and has been in progress in 38 districts. Jammu & Kashmir, Tamil Nadu, Bihar, Assam,

---

(29) GOI, DGHS, CBHI, 1984, Table 6.5, p.93.

(30) Government of India, Committee on Integration of Health Services (Chadha Committee) Report, (New Delhi : Ministry of Health, 1963).

(31) Government of India, Committee on Multipurpose workers under Health and Family Planning Programme (Kartar Singh Committee), Report, (New Delhi: Ministry of Health and Family Planning, 1973).

Table VII: NUMBER OF INSTITUTIONS AND ADMISSION CAPACITY/NO. ADMITTED IN DIFFERENT PARA-MEDICAL COURSES - 1983.

SL. NO.	DESCRIPTION OF COURSE	ENTRANCE QUALIFICATION	DURATION OF TRAINING	NO.OF INSTI-TUTIONS.	ADMISSION CAPACITY NO. ADMITTED.
1.	2.	3.	4.	5.	6.
1.	General Nursing	12 yrs School with Science	B.Sc = 4 yrs Diploma Certificate 3 yrs.	320	7,342*
2.	Auxiliary - Nurse Midwife	10th Class	1yr. 6 months	333	5,684*
3.	Midwifery	Regd. Nurse	6 months	275	7,299*
4.	Health visitor Course	SSLC/Matric, & Qualified ANM	6 months to 2 yrs. 6 months	22	835 2,830
5.	Health Inspector/ Sanitary Inspctor	Matric with Science/Inter Science	1 yr. or 3 mths. 1 1/2 yrs.	35	
6.	Laboratory Training	"	6 mths to 2 yrs.	-	1,498
7.	Medical Micro Biology	B.Sc. Hons.	2 years	1	20
8.	Medical Entomology	B.Sc/M.Sc.	about 2 mths.	1	30
9.	Audiometry, Radiology, Optometry & Electro-nic Technique.	Higher Secondary with science	2 yrs	1	30
10.	Health Education(Dip)	M.A.	1 year	1	55
11.	Health Statistics(Dip)	M.A. (Stats)	1 year	1	5
12.	Dietics	B.Sc.	10 months	1	20
13.	Medical Record Officers Course	Graduate	1 year	3	26
14.	Medical Record Technician Course	Higher secondary	6 mths	2	20
15.	Gen.& Health Statistics Course	Graduate	10 weeks	1	15
16.	Medical Couching	Hr. Sec.	12 weeks	1	15

* : Qualified Candidate.
Source : GOI, DGHS, CBHI, 1984, Table 6.7.

Nagaland, Manipur, Andhra Pradesh, Delhi and Andaman & Nicobar Islands have lagged behind in this respect. (32) Existing family planning institutions were strengthened and reorganised to undertake training of MPWs. At present the 7 Central Family Planning Training Institutes train the district level Medical Officers (MOs) and other key trainers, to staff Regional Health & Family Welfare Centres (RHFWCs). The 46 RHFWCs are responsible for training the PHC staff (MOs, BEE & HS/HAs), which in turn supervises the training of the PHC and lower level para-medical staff. (33)

The Medical and Para-medical personnel trained under the MPW Scheme since inception upto 30.6.1985, are as follows: (34)

1.	Medical Officers (MOs OHC)	17,415
2.	Block Extension Educators (BEEs)	5,813
3.	Health Assistants (male)	26,874
4.	Health Assistants (female)	13,931
5.	Health Workers (male)	89,851
6.	Health Workers (female) Auxiliary Nurse Midwives (ANMs)	65,035

The MPW Scheme is a centrally sponsored scheme.

Multipurpose Workers:

Health Assistants/Health Supervisors

The functions of the earlier male Family Planning Assistant, Basic Health Workers and Senior Workers of the communicable diseases programmes were integrated into a single male multipurpose para-medic known as the Health Assistant (HA (m)) or Health Superviser. Similarly the Public Health Nurses (PHNs), or Lady Health Visitors (LHVs), were retrained and designated as the Health Assistant (female) (HA (f)).

The HAs at the PHC supervise the Health Workers of 6 subcentres. A total of 45 schools with an admission capacity of 3,141 (1985) impart training to HA (f)s, who are selected from among senior ANMs/FHWs for 6 months in-service training. (35) New HA trainees undergo $1^1/_2$ to 2 years of training (Table VII). As on 31.3.86, some 27,111 HA (m) had been trained since the inception of the scheme. (36)

Health Workers

At the sub-centre level the Auxiliary Nurse Midwife (ANM) has been re-designated as Health Worker (female) or HW(f). By 1985 there were 412 HW (f) training schools with an annual admission capacity of 20,748. (37) As on

---

(32) Government of India, Annual Report 1985-86 (New Delhi: Ministry of Health & Family Welfare, 1986), pp. 191-192.

(33) Ibid, p.195.

(34) Ibid, p.192.

(35) Ibid, p.192.

(36) GOI, DGHS, CBHI, Health Statics of India 1986, (New Delhi: MOHFW, 1986), Table 7.4, p.105.

(37) GOI, 1986, p.194.

31.3.86, 90211 HW(m)s had been trained since the inception of the MFW Scheme. (38)

(b) Community Health Worker (CHW)/Health Guide (HG) Scheme.

The Shrivastava Committee Report (1975) (39) envisaged a large-scale transfer of knowledge to the rural population to make them more aware of their needs, more self-reliant and hence more influential in obtaining their share of the public health resources. It recommended:

"What we need therefore is the creation of large bands of part-time semi-professional workers from among the community itself who would be close to the people, live with them, and, in addition to promotive and preventive health services including those related to family planning, will also provide basic medical servioces needed in day-to-day common illnesses which account for about eighty per cent of all illnesses. It is to supplement them and not for supplanting them, that we have to create a professional highly competant, dedicted, readily accessible, and almost ubiquitous referral service to deal with the minority of complicated cases that need specialised treatment". (40)

It did not favour state supervision or remuneration for these voluntary part-time, community-level health workers.

The Community Health Workers (CHW) Scheme was launched on October 2, 1977, as a part of the Janata Government's new Rural Health Scheme. Under this scheme, the village community was expected to select, as per the guide-lines issued by the Government, a purely voluntary worker from among its members. The Community Health Worker (CHW), renamed the Community Health Volunteer (CHV) in July 1979, and redesignated as the Health Guide (HG) since June 1981, receives training for a period of 200 days spread over 3 months. The State has the financial responsibility of paying a monthly stipend of Rs. 200/- for the duration of the training, and a monthly honorarium of Rs. 50/- thereafter. Each HG is supplied with a manual and kit containing simple drugs. The drugs are replenished periodically at an overall annual cost of Rs. 600/- per Guide. Each Guide serves one village, or a population of 1,000.

Between 1977 and December 1984, 358,043 HGs had been trained. covering 4,172 PHCs. This excludes the States of J & K, Kerala, Tamil Nadu and Arunachal Pradesh, which have alternative schemes. However the Scheme has been initiated in 2 districts of Kerala. (41)

The introduction of the CHW Scheme has been a significant step in the development of a primary health care system. However the scheme has suffered from operational deficiencies and structural constraints. These

---

(38) GOI, CBHI, 1986, Table 7.4, p.103.

(39) Government of India, Group on Medical Education & Support Manpower (Shrivastav Committee), Health Services and Medical Education: A Programme for Immediate Action, (New Delhi: Ministry of Health & Family Planning, 1975).

(40) Ibid, p. 192. Ibid.

(41) GOI, 1986, p.194.

have been highlighted by a number of evaluation and field studies. (42)

(C) DAIS Training Programme

In the rural areas, the majority of the deliveries are done by traditional birth attendants, or Dais (or by relatives and neighbours). The Dais, in contrast to the ANMs, are local residents and face no problems in moving about in the village or surrounding areas. They are easily accessible at any hour, and provide service at a very low cost.

The Dais training programme was given emphasis in the 70s, particularly from 1977 onwards, in the context of poor utilization of PHC Services, high neo-natal mortality due to tetanus resulting from unhygienic conditions, and high maternal mortality due to the lack of adequate health care. The programme aims at the utilization of available manpower having community acceptibility. The training focuses on hygiene and the promotion of the small family more. Each Dai is provided with a Mid-Wifery kit.

Since 1974 upto 1985, 5.15 lakhs Dais have been trained. The Seventh Plan has set for the programme the long-term objective of providing one Dai per village; the Plan however sets itself the limited objective of training up all untrained dais functioning in the country. (43)

---

(42) The evaluation studies are:

(i) National Institute of Health and Family Welfare (NIHFW), Evaluation of Community Health Workers Scheme: A Collaborative Study, Technical Report Series No.4, (New Delhi: NIHFW, 1978);
(ii) NIHFW, Repeat Evaluation of Community Health Volunteers Scheme: A Collaborative Study, (New Delhi: NIHFW, 1979);
(iii) K. Dandekar & V. Bhate, "Maharashtra's Rural Health Services Scheme: An Evaluation". Economic & Political Weekly, Vol.13, No.50, 1978;
(iv) B.C. Ghosal & V. Bhandari, Community Health Workers Scheme: A Study, (New Delhi: DGHS, 1979).
(v) A. Bose et al, "Community Health Workers Scheme: placing the people's health in their own hands". In Bose & Desai, 1983;
(vi) I. Qadeer, "Social Dynamics of Health Care: The Community Health Workers Scheme in Shahdol District", Socialist Health Review, Vol.II, No.2, September 1985.

(43) GOI, MOHFW, 1985, p.133.

III

HEALTH EXPENDITURE PATTERNS IN INDIA

1. Introduction 38

2. Health Expenditure in India 39

3. Public Sources of Health Expenditure 39
   a. Centre : Health Expenditure in five year plans 39
   b. State expenditure on Health 44
   c. Biases in Public Expenditure Pattern 50
   d. State-sponsored health schemes and expenditure by public sector enterprises 55
   e. Health expenditure by local bodies 55

4. Private Sources of Health Expenditure 56
   a. Private household expenditure 56
   b. Expenditure incurred by private enterprises and voluntary organisations 58
   c. Expenditure incurred by private practitioners and private institutional facilities for medical care 58

HEALTH EXPENDITURE PATTERNS IN INDIA

1. INTRODUCTION

In developing countries with scarce resources, the provision of funds to the health sector, the allocation o funds within the sector and the efficient use of these funds are all important issues needing careful consideration from health planners. Surprisingly, given the size and importance of the health sector, it is only in the past few years that interest has been taken in issues such as cost-effectiveness, the financing of health services, demand studies, utilisation studies, manpower planning and medical treatment, etc.

Health care expenditure patterns in developing countries vary widely. Annual per capita government spending ranges from $ 1 to $ 4o, and this excludes outlays by local authorities, voluntary agencies and individuals. (1) By and large however, health budgets in these countries are very meagre and seldom exceed 2% of the GNP. Out of the 86 countries studied by the World Bank, 22 countries had health outlays of less than $ 1 per capita, and 50 countries had health outlays of less than $ 2. (2) These expenditures are mainly concentrated in curative health services.

Health expenditure, in its comprehensive sense, should ideally include the costs incurred on all promotive, preventive and curative services. The promotive dimension of health care refers to :

* protected water supply,
* environmental sanitation and hygiene (including work-place hygiene),
* housing,
* nutrition,
* health education.

Investment in preventive measures would cover:

* immunisation,
* maternal and child health services
* school health care
* supplementary nutrition programme
* drug control
* prevention of food & drug adulteration.

The curative dimension refers to the expenditure on:

* medical institutional facilities, such as hospitals, dispensaries & clinics,
* medical education and research,
* production of drugs.

The expenditure incurred for the establishment and expansion of primary health services and infrastructure, and for the training of health auxiliaries, has all three dimensions.

All these services involve administrative and logistical expenditure as well, such as on transportation, salary of staff, maintainance of administrative offices, etc.

---

(1) International Bank for Reconstruction & Development, Health Sector Policy Paper, (Washington : IBRD, February 1980).

(2) Ibid.

2. HEALTH EXPENDITURE IN INDIA

There are three main sources of health care financing. These include:

(i) Public and quasi-public sources, such as the outlays of the Central and State Governments, municipal corporations and local authorities and public sector undertakings;
(ii) Private sources, such as private practitioners, both general and specialists, private clinics and hospitals, private health insurance, employer financed services, private household expenses, private voluntary organisations, etc.; and
(iii) External sources, such as foreign multilateral, bilateral and philanthropic agencies.

The discussion on health expenditure patterns in India is divided into two broad areas. The first discusses the patterns of public expenditure on health, and the second focuses on the sources of private health expenditure.

3. PUBLIC SOURCES OF HEALTH EXPENDITURE

A. Centre : Health Expenditure in Five Year Plans,

The subject 'Health' in the Five Year Plans has a narrower scope than that indicated in the above definition. It is devided into the sub-sectors of health, including medical care and public health, and family welfare. Tables I (a) & (b) present the heads of expenditure under 'Health' & 'Family Welfare' respectively. The pattern of resource distribution in the Sixth & Seventh Plans is also shown. The curative and control components are dominant in budget priorities. This is discussed in greater detail below.

Health is a state subject,(3) and much of the plan allocations made by the centre are given to the states in the form of grants, and wholly or partially centrally sponsored schemes. The family welfare programmes, all National programmes for the control of communicable diseases and the health component (rural health services and infrastructure) of the Minimum Needs Programme are funded by the centre, while health & medical services (encompassing hospitals and dispensaries) are state sponsored. Only very few schemes, such as the CGHS, medical research and the ICMR and the national institutes dealing with health problems, are directly funded by the centre. However policy making & planning for the health sector has largely been determined by the centre.

Potable water supply and sanitation facilities formed a part of 'health' (as did Nutrition & Family Planning) in the first three Five Year Plans. Since the Fourth Plan (1969-74) it is listed separately, and the allocations are made under the head of Housing, Urban Development & Water

---

3) For Organizational details, see the chapter on Organisation of Health Services & Manpower Development in this volume.

Table I (a) : HEALTH - SIXTH & SEVENTH PLAN OUTLAYS.

(Rs. Crores)

SL. NO.	PROGRAMME	1980-85			1985-90			
		STATES	CENTRE & U.Ts.	TOTAL	STATES	CENTRE & U.Ts.		TOTAL
1.	Minimum Needs Programme for Health	408.46	168.50	576.96	1063.35	33.00		1096.35
						Centrally spons. progs.	Central Scheme	
2.	Control of Communicable Diseases	235.00	289.00	524.00	474.67	521.50	16.50	1012.67
3.	Hospitals & Dispensaries	)	45.00	)	)	-	65.75	)
4.	Medical Education & Research	)	62.00	)	)	-	75.51	)
5.	Indian Council of Medical Research	)		)	)	-	100.00	)
6.	Traditional Systems of Medicine & Homeopathy	)576.59	29.00	) 720.09	) 937.53	3.25	40.00	)1283.87
7.	Employees State Insurance Scheme	)		)	)	-	-	)
8.	Others	)	7.50	)	)	-	41.83	)
	TOTAL	1220.05*		1821.05	2495.55	557.75	339.59	3392.89

* This includes Rs. 193.50 crores towards 50% State share for Malaria Control Programme 5. & 7. do not form heads of expenditure in the Sixth Programmes Plan outlay.

Source : GOI, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi : Planning Commission, 1981), Ammexure 22.1, p. 382;
GOI, Planning Commission, Seventh Five Year Plan 1985-90, (New Delhi : Planning Commission, 1985), Annexure 11.1, p. 288.

Table I (b) : FAMILY PLANNING – SIXTH & SEVENTH PLAN OUTLAYS

SL. NO.	PROGRAMME	1980-85	1985-90
1.	Services & Supplies	587.70	1356.92
2.	Training	8.80	60.90
3.	Information, Education & Communication +	32.00	105.00
4.	Research & Evaluation	11.50	25.00
5.	Indian Council of Medical Research	-	50.00
6.	Maternal & Child Health	250.30	888.44
7.	Organisation	19.50	125.00
8.	Village Health Guide Scheme	68.00	370.00
9.	Area Programmes*	0.20	275.00
	Total	1078.00	3256.26

+ In Sixth Plan the programme was called Mass Media & Education;

* India Population Project in the Sixth Plan. See GOI, 1981, Annexure 22.5, p. 385.

Source : GOI, Planning Commission, 1985, Annexure 11.4, p.291.

Supply, administered by the Ministry of Works and Housing. Table II gives the heads of expenditure and the outlays in the Sixth & Seventh plans.

Table II : WATER SUPPLY & SANITATION - SIXTH & SEVENTH PLAN OUTLAYS.

SL. NO.	SCHEME	1980-85 OUTLAY	1980-85 ANTICIPATED EXPENDITURE	1985-90 OUTLAY
	States & U.Ts. Plan			
	(i) Rural water supply & sanitation	1554.24	1634.68	2350.00
	of which MNP	(1407.11)	(1566.68)	2253.25
	(ii) Urban water supply & sanitation	1753.56	1419.00	2935.64
	Total : States/U.Ts. Plan	3307.80	3053.68	5286.64
2.	Central Plan			
	(i) Centrally Sponsored Accelerated R. water supply programmes (ARP) Total :	600.00	802.54	1201.22
	(a) Grants to States/U.Ts.			1198.72
	(b) Grants to Voluntary Agencies			2.50
	(ii) Incentive B Scheme	125.00	116.11	-
	(iii) Other Programmes (Total)	14.22*(a)	5.26*(a)	35.61
	(a) WHO/UNICEF assisted Programmes for Ground Water Development & Handling Charges	1.08		1.30
	(b) Project Management Cell	0.14		0.11
	(c) Public Health Engineering	1.00		4.00
	(d) Prevention & control of water & Air Pollution	12.00		-
	(e) Feasibility studies on rural demonstration laterines	*(b)	5.26**	0.20
	(f) Research & Development			5.00
	(g) Monitoring & Managing information			1.00
	(h) Capital contribution to National Urban Infrastructure Development Finance Corporation			20.00
	(i) Rural low-cost sanitation			4.00
	Total Central Plan	614.22	923.91	1236.83
	Grand Total	3922.02	3977.59	6522.47

Notes : * (a) : Includes an outlay of Rs.12 crores for prevention & control of water & air pollution which has now been transferred to Science & Technology Sector.

* (b) : The provision for this scheme was made during the Sixth Plan in 1984-85.

** : Includes expenditure of Rs. 3.04 crores for Prevention & Control of Water & Air Pollution during 1980-81 & 1981-82.

Source : GOI, Planning Commission, 1985, Tables 12.7 & 12.8, pp. 302 & 305.

The various Nutrition programmes (4) are administered by different departments. The expenditure on the nutrition component of the Minimum Needs Programme is concerned with supplementary feeding programmes such as the Special Nutrition Programme (SNP) and the Mid-day Meals Programme (MDM). The Integrated Child Development Services (ICDS) Scheme is a budget head under the 'Social Welfare' Sector; these three nutrition intervention programmes aimed at vulnerable groups, are administrered by the Ministry of Social & Women's welfare. The Department of Food (Ministry of Food & Civil Supplies) administers the central schemes for nutrition planning & diet surveys, nutrition education and extension and the production of fortified fiids. The Department of Rural Reconstruction (Ministry of Agriculture & Rural Development) administers the Applied Nutrition Programme (ANP). Table III gives the heads of expenditure under Nutrition, & the Sixth & Seven Plan Outlays.

Table III : NUTRITION - SIXTH & SEVENTH PLAN OUTLAYS.

SL. NO.	PROGRAMME	1980-85 OUTLAY	1985-90 OUTLAY
1.	Plan Outlay for States & U.Ts.(Total)	223.19	1732.86
	Central Schemes: Nutrition Programme of Department of Food		
2.	Nutrition Education & Extension :		
	(a) Mobile Food & Nutrition Extension Units	1.00	-
	(b) Mass Media Communication & Extension	0.75	-
	(c) Integrated Nutrition Education	1.00	2.00
3.	Production of Nutritious Beverages	0.60	1.00
4.	Production of Nutritious Foods	3.70	0.92
5.	Fortilication of Foods :		
	(a) Fortification of Salt	4.00	2.00
	(b) Fortification of Milk	1.00	0.80
	(c) Fortification of other foods	0.10	-
6.	Survey, Research & Evaluation :		
	(a) Diet & Nutrition Surveys	0.05	0.10
	(b) Nutrition Planning	1.10	-
	(c) Research & Development Activities & Evaluation	0.50	0.50
	(d) Directional Charges	0.15	-
	Total	13.95	7.32
	Centrally Sponsored Scheme Nutrition Programme of Department of Rural Development		
7.	Applied Nutrition Programme	1.00	
	Child Welfare & Development (Ministry of Social & Women's Welfare)		
8.	Integrated Child Development Services	45.00	500.00

Source : GOI, Planning Commission, 1985-90, Annexure 13.4-p.320, Ann. 13.3-p.319, Ann. 13.1-p.317.

Another major component of health care, namely drugs & pharmaceutical

(4) For details, see the chapter on 'Nutrition' in this volume.

products, have always been the responsibility of the Industry Ministry rather than of the Ministry of Health. These health - related products are treated on par with other industrial products, and are administered by the Ministry of Chemicals and Fertilizers. (5)

The other sources of public expenditure on health, are the state-sponsored health schemes & the health care expenditure of the public sector undertakings.

Plan Outlays

The total outlay on the health & family welfare sector has increased substantially over the successive plans. The total investment increased from Rs. 65.2 crores in the First Plan to Rs. 6649.2 crores in the Seventh Plan (Table IV, col.(6)). However the trend in the distribution of resources between the two sub-sectors is revealing.

The share of health (Table IV, col. (3): percentage outlay on health to total plan outlay) in the total plan outlays has consistently declined, stabilising at around two per cent of the total outlay. Since some of the health outlays remained unspent, the percentage of actual expenditure has been low. However the central plan allocations form only a small part of the total governmental health expenditure, as the major expenditure is incurred at the level of the States.

The rise in allocations to the family welfare sector in the Five Year Plans has been at the expense of the public health sector. The percentage share of family planning in the total health & family planning outlay (Table IV, col. (7)) has risen from a negligible amount in the First Plan to 49.0 per cent in the Seventh Plan. The ratio proportion of allocation between family welfare (Rs. 3392.3 crores) and health (Rs. 3392.89 crores) is the highest ever in the Seventh Plan (=0.96). (6)

Investments in water supply and sanitation, separate from health and family welfare, have increased considerably both in absolute terms and in percentage share of the total plan investment. From 0.56% of the total plan outlay, the share of this sector has risen to just under four per cent in the Seventh Plan (although this is slightly lower than the Sixth Plan Outlay. Table IV, Col.(8)). (7)

B. State Expenditure on Health (8)

Health is a State (provincial) subject & the responsibility for

---

(5) See also the Chapter on 'Drugs & Pharmaceuticals' in this volume.

(6) See R. Duggal, "Health in Seventh Plan : Boost to Private Sector", Radical Journal of Health, Vol. I, No.1, June 1986 (a), pp. 29-30.

(7) See also the Chapter on 'Environment & Health' in this volume.

(8) This section is almost entirely based on the study by Ravi Duggal, "Political Economy of State Health Financing", Radical Journal of Health, Vol.1, No.3, December 1986, (b) pp. 79-85.

Table IV : PATTERN OF INVESTMENT ON HEALTH, FAMILY WELFARE AND WATER SUPPLY AND SANITATION (PLAN OUTLAYS) IN DIFFERENT PLAN PERIODS IN PUBLIC SECTOR - CENTRE, STATES AND UTS.

PLAN PERIOD	TOTAL PLAN INVESTMENT/ OUTLAY (ALL HEADS OF DEVELOPMENT)	HEALTH	FAMILY WELFARE	RATIO OF FAMILY TO HEALTH COL. (3) / COL. (2)	SUB-TOTAL	PROPORTION OF OUTLAY ON FAMILY WELFARE TO TOTAL OUTLAY ON HEALTH & FAMILY PLANNING (%) COL.(3) / COL.(2)+(3) x100	WATER SUPPLY & SANITATION
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. First Plan (1951-56)	1960.0 (100)	65.2 (3.3%)	0.1 (-)	negligible	65.3 (3.3%)	negligible	11.0 (0.56%)
2. Second Plan (1956-61)	4672.0 (100)	140.8 (3.0%)	2.2 (0.1%)	negligible	143.0 (3.1%)	1.5	74.0 (1.6%)
3. Third Plan (1961-66)	8576.0 (100)	225.9 (2.6%)	24.9 (0.3%)	.11	250.8 (2.9%)	9.9	105.7 (1.2%)
4. Annual Plan(3) (1966-69)	6625.4 (100)	140.2 (2.1%)	70.4 (1.1%)	.50	210.6 (3.2%)	33.4	102.7 (1.6%)
5. Fourth Plan (1969-74)	15778.8 (100)	335.5 (2.1%)	278.0 (1.8%)	.83	613.5 (3.9%)	45.3	548.0* (3.5%)
6. Fifth Plan (1969-79)	39426.2 (100)	760.8 (1.9%)	491.8 (1.3%)	.65	1252.6 (3.2%)	39.3	1107.5 (2.8%)
7. Sixth Plan (1980-85)	97500.0 (100)	1821.1 (1.9%)	1010.0 (1.0%)	.55	2831.1 (2.9%)	35.7	3922.0 (4.0%)
8. Seventh Plan (1985-90)	180000.0 (100)	3392.9 (1.9%)	3256.3 (1.8%)	.96	6649.2 (3.7%)	49.0	6522.5 (3.6%)

* : Including Figures in brackets are percentages of the total plan outlay. LIC loan assistance which was not reflected in the State Plans.

Source : (i) First to Sixth Plan Investment/outlays : GOI, DGHS, CBHI, Health Statistics of India 1984, (New Delhi: MOHFW, 1984), Table 4.1.

(ii) Seventh Plan Outlay : GOI, Planning Commission, Seventh Five Year Plan 1985-90, Vol. I, (New Delhi: Planning Commission, 1985), Table 3.4(6), p. 27.

(iii) Cols. (5) and (7) : Computation given in A. Bose, "The Allocation of Health Care Resources in India. Health for Whom?", Paper presented at the Conference on the Allocation of Health Care Resources in India, Columbia University, New York, April 14-16, 1986, P. 18.

providing health care services vests with the concerned state. The State health sector incorporates three components -

(a) medical services, including CGHS, ESIS.
(b) public health which includes water supply & sanitation (as against the separation of these two components in the central plans); and
(c) family welfare, including maternal & child health (MCH). As pointed out earlier, family welfare is almost entirely a centrally funded programme (it falls under the concurrent list).

Table V gives State-wise per capita expenditure on health & family welfare between 1979-80 and 1981-82.

The expenditure on health & family welfare varies widely between different states. While the national average per capita expenditure on health for 1981-82 was Rs. 27.86, the range in the case of the larger, more populated states varied from Rs. 14.49 for Bihar, Rs. 14.38 for Uttar Pradesh, Rs. 23.05 for Madhya Pradesh at one end, to Rs. 32.55 for Punjab, Rs. 33.26 for Maharashtra & Rs. 35.61 for Kerala.

The major sources of data on state financing of health care in India are -

(a) Combined Finance & Revenue Accounts (CFRA) of the Union & State governments compiled by the Comptroller & Auditor General of India;
(b) Summarised Accounts in the Indian Economic Statistics : Public Finance, compiled by the Department of Economic Affairs, Ministry of Finance; and
(c) Performance Budgets of the Health Ministeries of the respective states.

There are hardly any studies that have attempted to compile & analyse state-wise health expenditure patterns & trends. (9) In the CFRA, data is available state-wise but the disaggregation is of little use as only administrative categories are used such as 'establishment', 'direction', 'grants' etc. The programme-wise expenditure is given in each State's Performance budgets, but these documents are not easily available; and if available are too voluminous for a time-series analysis.

State Financing of Health : an aggregate analysis

The analysis of the trend in State expenditures reveals that the health sector was accorded a very low priority at the beginning of planned development. In the First Plan period the State spent an average of Rs. 39.40 crores per annum on health care, which was only 2.2 per cent of total government expenditure and only 0.39 per cent of the Gross Domestic Product (GDP) (Table VI). In the Second Plan period the health care expenditure more than doubled, and this pattern continued in each subsequent plan (despite the setback during the Annual & Fourth Plans). At present the share of the health sector has stabilised around four to five per cent of the total government expenditure (Table VI, Col.II). Similarly state health expenditure as a proportion of the GDP has also shown marginal increases

---

(9) There is only a single ORG study to date in which such data for Gujarat & Maharashtra was compiled for a single year - 1982-83. See M.E. Khan & C.V.S. Prasad, Health Financing in India : A Case study of Gujarat & Maharashtra, (Baroda : Operations Research Group (ORG), 1985).

Table V : PER CAPITA (PUBLIC SECTOR) EXPENDITURES ON HEALTH (MEDICAL & PUBLIC HEALTH) & FAMILU WELFARE DURING THE YEARS 1979-80 TO 1981-82.

SL. NO.	STATES/U.Ts.	1970-80(Rs.)		1980-81(Rs.)		1981-82(RS.)	
		HEALTH	F.W.	HEALTH	F.W.	HEALTH	F.W.
1.	Andhra Pradesh	17.26	1.98	20.59	2.33	22.51	2.94
2.	Assam	14.08	1.02	18.79	1.13	19.38	1.39
3.	Bihar	9.61	1.06	13.29	1.36	14.49	1.98
4.	Gujarat	21.57	2.93	22.74	2.97	26.71	4.30
5.	Haryana	23.17	1.84	28.45	2.18	37.10	2.21
6.	Himachal Pradesh	61.93	3.17	79.37	4.71	101.29	5.88
7.	Jammu & Kashmir	66.82	1.66	82.95	1.94	94.72	2.14
8.	Karnataka	15.43	2.25	17.00	2.22	21.00	2.56
9.	Kerala	25.20	2.23	29.76	2.40	35.61	2.67
10.	Madhya Pradesh	17.05	1.74	21.14	1.97	23.05	2.58
11.	Maharashtra	25.34	2.06	25.14	2.05	33.26	3.10
12.	Manipur	73.86	3.65	90.14	4.62	83.04	5.69
13.	Meghalaya	81.22	2.93	120.10	3.24	131.65	4.59
14.	Nagaland	151.54	1.62	201.67	1.37	208.38	1.67
15.	Orissa	16.52	1.99	19.84	2.43	22.18	3.09
16.	Punjab	25.69	1.58	29.60	2.15	32.55	3.08
17.	Rajasthan	19.74	1.58	31.12	2.24	37.22	2.86
18.	Sikkim	71.42	3.69	76.21	3.10	84.08	3.19
19.	Tamil Nadu	16.83	1.63	20.99	1.88	30.10	2.25
20.	Tripura	30.32	1.00	30.87	0.96	39.04	1.36
21.	Uttar Pradesh	11.73	1.43	12.50	1.68	14.38	2.42
22.	West Bengal	20.12	1.42	24.26	1.56	27.78	1.77
23.	Arunachal Pradesh	91.49	0.66	99.85	0.88	158.05	1.50
24.	Goa	81.09	1.71	95.71	1.88	122.94	2.02
25.	Mizoram	107.70	0.03	141.95	4.37	138.88	5.27
26.	Pondicherry	129.70	2.54	75.11	2.69	94.11	3.38
	All India	19.19	1.84	23.53	2.14	27.86	2.77

Note : All-India Total includes Central Government & Expenditure in respect of U.Ts. of A.N. Islands, Chandigarh, D. & N. Haveli, Delhi & Lakshdweep.

Source : Combined Finance & Revenue Accounts of the Union & State Governments in India 1979-80, 1980-81, 1981-82, C.A.G. India, in GOI, DGHS, CBHI, 1984, Table 4.4

Table VI : HEALTH EXPENDITURE, GDP AND GOVERNMENT EXPENDITURE IN INDIA

PLAN PERIOD	(a) STATE HEALTH EXPENDITURE			(b) % PLAN EXPENDITURE	RATIO OF FW TO MEDICAL & PUBLIC HEALTH	(c) PRIVATE MEDICAL EXPENDITURE	RATIO OF PRIVATE TO STATE MEDICAL EXPENDITURE (COL.2)	PER CAPITA PER ANNUM HEALTH EXPENDITURE (RS.) STATE/PRIVATE		TOTAL GOVERNMENT EXPENDITURE	% STATE (COL.4) HEALTH OF TOTAL GOVT.EXPENDITURE	GDP AT CURRENT MARKET PRICES	%STATE HEALTH (COL.4) OF GDP	POPULATION (IN crore
	Medical & Public Health	Family Welfare	Total Health											
1	2	3	4	5	6	7	8	9		10	11	12	13	
First Plan (1951-56) :	197.0	0.15	197.15	38.7	0.08	N.A.	-	1.04	-	8915	2.2	50175	0.39	38
Annual Avg. :	39.40	0.13	39.4							1783		10035		
Second Plan (1956-61) :	420.8	2.2	423.0	51.3	0.52	N.A.	-	2.01	-	13520	3.13	66235	0.64	42
Annual Avg. :	84.16 (113.6)	0.44 (1366.67)	84.6 (114.85)							2704 (51.65)		13247 (32.0)		
Third Plan (1961-66) :	939.1	24.9	964.0	37.1	2.65	2227	237.14	4.20	9.68	23080	4.18	99890	0.96	46
Annual Avg. :	187.82 (123.1)	4.98 (1031.81)	192.8 (127.89)			444.5				4616 (70.7)		19978 (50.0)		
Annual Plans (3) (1966-69) :	723.0	70.4	793.4	39.5	9.74	2237	309.14	5.20	14.62	21213	3.74	155390	0.85	51
Annual Avg. :	241.0 (28.31)	23.47 (371.28)	264.5 (37.18)			745.7 (67.4)				7071 (53.18)		31078 (55.56)		
Fourth Plan (1969-74) :	1954.0	284.5	2238.5	47.9	14.56	5629	288.07	8.14	20.47	53255	4.20	227395	0.98	55
Annual Avg. :	390.8 (62.15)	56.9 (142.43)	447.7 (69.26)			1125.8 (50.97)				10651 (50.6)		45479 (46.34)		
Fifth Plan (1974-79) :	4201.1	538.2	4739.3	49.5	12.81	6578	156.58	15.29	23.74	103305	4.59	411810	1.15	62
Annual Avg. :	840.22 (115)	107.64 (89.17)	947.9 (111.7)			1315.6 (16.85)				20661 (93.98)		82362 (81.1)		
Sixth Plan (1980-85)** :	11152.4	1626.2	12778.6	52.8	14.58	11479***	102.92	36.0	32.33	262150	4.87	846670	1.51	71
Annual Avg. :	2230.48 (165.46)	325.24 (202.15)	2555.6 (169.6)			2295.8 (74.5)				52430 (153.7)		169334 (105.6)		

Notes : (Figures in parenthesis are average percentage growth rates over the previous period).

* : Includes water supply & sanitation, CGHS, ESIS, ICMR, Medical Education & Research.

** : last two years of the Sixth Plan are budget estimates/allocations.

*** : 4 years as reported in National Accounts ; fifth year estimated at Rs. 2930 crores. See. R. Duggal, "Political Economy of State Health Financing", Radical Journal of Health, Vol.1, No.3, Dec. '86(b).

Source: (a) GOI, Comptroller & Auditor Genral of India, Combined Finance and Revenue Accounts (1951-52 through 1981-82), (N. Delhi : CAGI,1982); GOI, Department of Economic Affairs, Indian Economic Statistics: Public Finance, (New Delhi : Ministry of Finance, 1982).

(b) GOI, DGHS, CBHI, Health Statistics of India, 1984, (N. Delhi : MOHFW, 1985).

(c) GOI, Central Statistical Organization, National Accounts Statistics, (New Delhi: Ministry of Planning, year 1965 through 1986).

over the years. Table VI presents data in this regard according to the different plan periods.

The data shows that the growth rate of both health & family planning expenditures have been much greater than the growth of the total government expenditure and the GDP. Also, the gap between state health expenditure and private medical expenditure appears to be narrowing, according to the estimate of the 'National Accounts' (Table VI, cols. 2,7 and 8). These trends are indicative of high investment in the state health sector. However, the performance & level of utilisation of public health programmes do not coroborate this.

Firstly, although the growth rate of expenditure in the state health sector has been higher than that of the total government expenditure, the level of investment and expenditure remains at a low level. For the year 1984-85 the allocated expenditure for the entire state health sector was Rs. 3287.8 crores, (10) working out to a meagre Rs. 43.84 per capita per annum. This has to cover expenditure on medical services & national disease programmes, public health & PHC, water supply & sanitation, CGHS, ESIS, MCH, family planning, medical education & research, health bureaucracy, construction of new health centres & hospitals.

Secondly, a large proportion of health expenditure in the Third, Fifth & Sixth Plan periods, when the growth rate of health expenditure had been the highest (Table VI, see figures in parenthesis - col.2), went into infrastructure development, i.e. water supply schemes & consturction of health centres. In fact, over one-half of the medical & public health expenditure since the Third Plan period is being spent on water supply & sanitation. Inspite of this the health infrastructure remains poor, & even today the public health sector has not reached the level of infrasturucture & facilities recommended by the Bhore Committee in 1946.

Thirdly, between 70 to 80 per cent of the investment and expenditure in the state health sector goes to the 23 percent population residing in urban areas. This is despite the fact that urban areas have access to other public & guasi - public health care facilities such as municipal and other local body hospitals & dispensaries, municipal protected water supply & sanitation, municipal funded medical education, ESIS & CGHS for industrial & government workers & so on. Duggal cites the example of Maharashtra, where out of a total of 478 public (central & State) hospitals & dispensaries in 1983, 432 (90%) were in urban areas and of all the state owned hospital beds, 97 per cent were in urban areas. And out of the total number of public & privately owned hospital beds in Maharashtra, 30 per cent were in Bombay city alone. (11)

Fourthly, leaving aside the preventive & promotive services, the curative services provided by the state, especially in the rural areas, are grossly inadequate. Hence, both in the rural areas, where the private medical practitioner provides services for between two-thirds to three-fourths of illness episodes in the population, and in the urban areas, the private health sector has the larger share of health facilities & manpower.

---

(10) GOI, Department of Economic Affairs, Indian Economic Statistics : Public Finance, (New Delhi : Ministry of Finance). Cited in Duggal, 1986(b).

(11) Government of Maharashtra, State bureau of Health Intelligence, Health Establishments in Maharashtra, 1983, cited in Ibid.

And finally, the credibility of the state's rural health services is very low due to the weightage given to achieving family planning targets. Over 60 per cent of the PHC staff's time is spent on family planning work. To quote Duggal, "Therefore it becomes very clear that both the 'high' growth rate of the state health sector and the narrowing gap between state & private health sector expenditure is only an illusion created by aggregated data".

Pattern of Expenditure during the Sixth Plan : Case Study of Gujarat

An ORG study (12) recently presented data for the entire Sixth Plan period for Gujarat, to indicate the pattern of expenditure in larger and better developed states. The pattern is as follows -

Out of the total health expenditure between 1980-85 -

1.	Medical relief	- 25%
2.	Family Planning	- 18.9%
3.	Control of communicable diseases	- 15.2%
4.	ESI	- 11.4%
5.	Minimum Needs Programme	- 9.3%
6.	Nutritional Programmes	- 6.6%
7.	Medical education	- 5.3%

Such important components as the training of paramedical staff (2% of the total expenditure) and MCH supplies (within family planning programme - 0.1%) remained neglected. Other crucial components such as transportation, journey allowance, mass education, etc. had a negligible expenditure of less than one per cent (0.8% to 0.9). (13)

Secondly, a comparison of the actual expenditure with the Sixth Plan outlays showed that for every Rs. 100 planned, only Rs. 82 was spent.

Sub-sector expenditure :
Health - Rs.76 out of every Rs.100 planned.
Family Planning - Rs. 138.
Sewerage & water supply - Rs. 641.
Nutrition - Rs. 41.

"Thus the expenditure in all the sub-sector except family planning was lower than what was planned". (14)

C. Biases In Public Expenditure Patterns

Certain biases are in-built in the financing pattern of the present health care system.

(i) The Urban Bias

Some 77 per cent of the total Indian population resides in rural areas.

---

(12) M.E. Khan & C.V.S. Prasad, "New Initiatives in Health & Family Welfare Cases in India - Some observations", Paper presented at the Conference on Allocation of Health Care Resources in India & the United States, April 14-17, 1986(b), Columbia University, New York.

(13) Ibid, p.8.

(14) Khan & Prasad, 1985, p.52.

The rural population, in comparison with the urban one, has a higher rate of infant & child mortality, a higher birth rate, and greater incidence of morbidity and malnutrition. One reason for this situation has been the differential distribution of health resources in favour of urban areas.

Table VII shows the lop-sided growth of health care facilities & their concentration in the urban areas. An important indicator of health care facilities is the number of hospital beds available to the population. In 1956, the earliest year for which this break-up is available, 25 per cent of all hospital beds (government, local body & private) were located in rural areas. This had declined to 13.7 per cent in 1974, clearly indicating that the rural areas had been grossly neglected regarding health care investment.(15)

According to the Planning Commission's own admission, between 1951-74, out of the total state & central expenditure of Rs. 855 crores for providing water and sanitation facilities, 566 crores (66.2%) were spent on urban areas and only 289 crores (33.8%) were spent on rural facilities.(16) The share of primary health centres and training schemes for rural health manpower in comparison to medical colleges and urban hospitals & dispensaries, show the same inequalities. Between 1966 & 1984 thePHC: Population ratio has remained constant at one PHC per 80,000 population (Table VII).

The Minimum Needs Programme (MNP) was an attempt to shift the priorities in favour of rural areas. The figures below show the trend in plan outlays for rural water supply/sanitation and rural health from the Fif th Plan onwards.(17)

	Fifth Plan	Sixth Plan	Seventh Plan
Rural Water Supply & Sanitation (in crores)	481.24	2154.24	3551.22
% to total health outlay	(46.7)	(55.0)	(54.4)
Rural Health (in crores)	120.30	576.96	1096.35
% to total health outlay	(17.7)	(31.7)	(32.3)

It is difficult to compute the exact distribution of the health sector outlays into rural and urban heads, as several schemes are common to both areas.An 1986 ORG study (18) arrived at certain approximate estimates by classifying the schemes into purely rural, purely urban and those which were common to both. At the national level, as much as 44 per cent of the expenditure was incurred purely in urban areas (on Medical Relief, Education

---

(15) Table & figures computed in Duggal, 1986(b), pp. 81-82.

(16) Government of India, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi : Planning Commission, 1981), p.397.

(17) See Tables I(a) & II for 6th & 7th Plan outlays on health & water supply/sanitation respectively. See Ibid, pp. 382 & 401, for 5th Plan outlays. The above figures on rural water supply/sanitation include the central outlay on the Accelerated Rural Water Supply Programme (ARP).

(18) M.E. Khan & C.V.S. Prasad, Health Sector Expenditure Differentials in India - A State & National Level Study, (Baroda : ORG, 1986(a)), cited in Khan & Prasad, 1986(b), p.11.

ES100
COMMUNITY HEALTH CELL
47/1, (First Floor), St. Marks Road

Table VII : HEALTH FACILITIES IN INDIA (SELECTED YEARS)

YEAR	NO.OF HOSPITALS	POPULATION PER HOSPITAL (lakhs)	NO.OF PHCs	RURAL POPU-LATION PER PHC (lakhs)	NO.OF BEDS	POPU-LATION PER BED	PERCENT OF RURAL BEDS	PERCENT OF HOS-PITAL OWNED BY THE STATE	PERCENT OF BEDS OWNED BY THE STATE	NO.OF DISPEN-SARIES	PERCENT OF DIS-PENSARIES OWNED BY THE STATE
1951	2694	1.3	-	-	117000	3199	N.A.	N.A.	N.A.	6515	N.A.
1956	3307	1.2	725	4.4	157000	2554	25.0	N.A.	N.A.	7100	N.A.
1961	3094	1.4	2565	1.4	230000	1930	N.A.	N.A.	N.A.	9406	N.A.
1966	4147	1.2	4631	0.8	304000	1628	N.A.	N.A.	N.A.	10236	N.A.
1971	3976	1.4	5112	0.8	331000	1673	N.A.	N.A.	N.A.	10897	N.A.
1974	4014	1.5	5283	0.8	344561	1668	13.7	62.6 (16.0)	69.5 (16.2)	10200	N.A.
1982	6805	1.0	7539	0.9	504538	1405	17.2	50.8 (44.3)	68.1 (26.7)	16754	60.9 (14.1)
1984	7181	1.0	7210	0.8	536370	1378	17.4	49.3 (45.3)	68.1 (26.7)	21780	51.8 (29.6)

Note : (figures in brackets indicate the percentage share of the private sector; the remainder is the facilities owned by local bodies).

Source : Compiled by Duggal, 1986(b) from GOI, CBHI, Health Statistics of India/Pocket book of Health Statistics, (respective years).

& Urban Family Welfare Services) while rural areas accounted for only 15 per cent (on PHC/SHC/rural dispensaries, capital outlay (MNP), Rural Family Welfare Services, Dai training, Village Health Guide training etc.). The common schemes which accounted for 40.9 per cent of the total expenditure, were also unfavourably weighted in favour of urban areas.

(ii) The Curative Bias

According to one health expenditure analysis, (19) 61 per cent of the health finances are diverted to medical services mainly curative in nature, while a mere 39 per cent is spent on public health. The plan outlays on health have been largly concerned with National Programmes for disease control, medical research & training and hospitals/dispensaries. In the Seventh Plan, medical education & research (including the ICMR), which are concerned with the development of the medical profession, have alone been allocated 175 crores (Table I(a)).

The bulk of family planning outlay is spent on services & supplies, while MCH with its preventive orientation gets a meagre amount. A Comparison of the Sixth & Seventh Plan outlays (Table I(b)) provides the following picture :

	Sixth Plan	Seventh Plan
1. Services & Supplies	64%	42%
2. MCH Services	23%	27%
3. Village Health Guide Scheme	6%	11%

The Sixth & Seventh Plan documents lay great emphasis on MCH care, immunization & the training of paramedical staff. However, as pointed out by the ORG study, (20) these priorities are not reflected either in the Sixth Plan outlays nor in the actual expenditure (plan & non-plan) during the plan period. The percentage of the total expenditure spent on these programmes compared to the percent expenditure on medical education by the states of Gujarat & Maharashtra during 1980-85, is as follows:

	Gujarat (1980-85)	Maharashtra (1980-85)
1. Materials & supplies for MCH & EPI –	0.1%	0.5%
2. Training of paramedics and extension Staff –	2.0%	0.5%
3. Medical education –	5.3%	7.9%

Thus curative health care continues to be the main-stay of the health system.

Another aspect of the curative bias has been the disproportionate share of drugs in health care. In 1984-85 India produced drugs worth Rs. 2,214

---

(19) S.Kulkarni, Health Expenditure Analysis, Part I, (New Delhi : ICSSR, 1979, mimeographed).

(20) Khan & Prasad, 1985.

crores (21).

(iii) The Private Sector Bias

It is a well-known fact that public sector services are utilised by only 20 per cent of the population. The expenditure on health services for the rest of the 80 per cent comes from private sources; however only a few estimates are available regarding the respective share of public and private expenditure on health in India. (The private sources of health expenditure are discussed in section 4).

The National Sample Survey (28th round, 1973-74) (22) has estimated household health expenditure at Rs. 843 crore (Rs. 14.05 per capita per annum) which was 300 per cent more than the public expenditure of Rs. 280 crore in the same year. Applying this same ratio for the year 1981-82, the per capita private health expenditure was Rs. 83.58 as against Rs. 27.86 per capita, public expenditure. This adds up to a total health expenditure of Rs. 7635.87 crore which constitutes 5.14 per cent of the Gross Domestic product (GDP - Rs. 1486.78 crore, 1981-82 prices).

According to the CMIE estimates (23) however, health expenditure was only 2.1 per cent (i.e. Rs. 3122.24 crore) of the GDP in 1981-82, out of which the government expenditure was 0.8 per cent (Rs. 24.97 crore) and private expenditure was 1.3 per cent (Rs. 40.58 crore).

On the other hand, FRCH estimates, based on data from various sources, indicate that health expenditure in India constitutes 8.33 per cent of the GDP (Rs. 196745 crore at 1983-84 prices). Some 60.4 per cent of the above is borne by households as a part of their consumption expenditure, with the majority of these households being in the rural areas (94 per cent as against 35% in urban areas). (24) Thus private expenditure remains the major source for financing health services in India. This only adds to the disparity between rural and urban areas, and between the minority with purchasing power and the majority living on the margins of poverty.

The data in Table VI appears to indicate that the gap between the health expenditure in the private & state sectors has narrowed down to almost unity in the Sixth Plan period. However this is contradicted by two other features. Firstly, between two-thirds and three-fourths of health care utilisation is in the private sector. And secondly, the private health

---

(21) Government of India, Planning Commission, Seventh Five Year Plan 1985-90, Vol.II, (New Delhi : Planning Commission, 1985), p.191.

(22) See Ravi Duggal, "Health Expenditure in India", FRCH Newsletter, November-December, 1986, Vol.1, No.1.

(23) Centre for Monitoring Indian Economy, Standard of Living of the Indian People - 1984, (Bombay : CMIE, February 1984), Fig. 4.17. The expenditure figures have been computed by CMIE from the CSO, National Accounts Statistics 1970-71 - 1980-81, (New Delhi, February 1983). In contrast to the CMIE estimates, the CBHI estimates of per capita public expenditure for 1981-82 was Rs. 27.86 (see Table VI in this chapter). This discrepancy needs further analysis. It is possible that the public expenditure estimate of Rs. 27.86 per capita combines both the Health Ministry's expenditure & that of the other public sector undertaking.

(24) See Duggal, 1986(a) and 1986(b) for the details of this estimate, & the private & public expenditure pattern for urban & rural areas.

sector has experienced very high growth rates after mid-seventies (see figures in brackets showingthe percentage share of hospitals & beds in the private sector, Table VII).

D. State - sponsored Health Schemes & Expenditure by Public Sector Enterprises.

Two categories of subsidised medical care for a small section of the employed population in the public sector, also constitute sources of public expenditure in India. These are -

1. Insurance & health schemes, such as the Central Government Health Scheme (CGHS) and the Employees State Insurance Scheme (ESIS); and
2. Medical expenditure of public sector undertakings, namely Ministry of Railways, other public sector corporations and the Armed Forces.

The ESIS covers all industrial and factory workers earning upto Rs. 1600/- per month. A variety of medical, sickness, maternity, disablement benefits & other programmes are made available to the insured person. By December 1983, the scheme covered all the States with a network of 1163 ESIS dispensaries & 84 ESIS hospitals having a total bed strength of 22,552. (25)

The CGHS, which is planned on similar lines, caters to all grades of Central Government employees. The scheme covers 15 cities and benefits 644,062 families (1982-83). It provides medical care through 191 allopathic dispensaries, 27 Ayurvedic, 27 Homoeopathic and 2 Unani dispensaries. (26)

Health expenditure estimates for 1981-82, of four major public sector corporations are presented in Table VIII.

Table VIII : PER CAPITA MEDICAL EXPENDITURE OF SELECTED PUBLIC SECTOR CORPORATIONS DURING 1980-81.

AGENCIES/ORGANIZATIONS	PER EMPLOYEE/FAMILY PER ANNUM EXPENDITURE (Rs.).
Air India	725.00
BHEL	830.00
SAIL	677.93
Railways	310.45

Source : Lok Sabha, Estimate Committee (1981-82), 22nd Report of Lok Sabha, (New Delhi : MOHFW, March 1982), cited in Khan & Prasad, 1985, p.III.

E. Health Expenditure by Local Bodies.

Data on sample minicipal bodies in urban areas, & local bodies such as Zilla Parishads in rural areas is available. In Urban areas, municipal

(25) Government of India, Directorate General of Health Services, Central Bureau of Health Information, Health Statistics of India 1984, (New Delhi : Ministry of Health & Family Welfare, 1984), Table 13.3, p.244.

(26) Ibid, Table 13.1, p.242.

corporation & municipalities spent around Rs. 53 per capita (estimated from a 1976-77 based NCAER study of municipal resources, 1980) or totally Rs. 848 crore.

Estimates based on the expenditure accounts of Pune & Dhule Zilla parishads, put the health expenditure of Zilla parishads at Rs. 0.20 per capita per annum (on an average). (27)

4. PRIVATE SOURCE OF HEALTH EXPENDITURE

There are three sources of private expenditure on health. The first is the private household's or the private individual's consumption expenditure on health . The second includes private practice and private institutional facilities for medical care. The third source is the expenditure incurred by private industrial groups and the voluntary agencies (non-government organizations).

It has been pointed out that "the private sector is by far the largest sector & is responsible for three - quarter of all medical care whether rural or urban. ....At least three - quarters, if not more, of all doctors whether allopathic or non-allopathic are trained chiefly at government expense but they earn their living through private practise. As general practitioners, consultants, or running their own diagnostic clinics & nursing homes, they are mainly concerned with curative medicine & maximising earnings. There is an increasing number of private hospitals in the larger cities which offer expensive modern medical & surgical care. The lucrative nature of this sector is revealed by the extent of pressures exerted for admission to medical colleges & by the rush of corporate sector in opening 5-star super-speciality medicare centres investing several hundred crores of rupees in each such centre". (28) Yet, "we have virtually no information about the operation of this sector & the extent and nature of health expenditure incurred in the private sector". (29)

While public expenditure on health is documented (although the data shows many discrepancies & contradictions between different government sources), the data on private expenditure is virtually non-existent. Such data can only be surmized indirectly from a variety of sources, as for instance the number bf doctors in private practice, the amount of drugs sold outside the public sector, the cost incurred in establishing and running private hospitals, etc. Since this forms the largest amount of expenditure on health, determining the extent and nature of private expenditure should be one of the highest priorities in health research.

A. Private Household Expenditure

In the absence of detailed analysis of private household expenditure on health, it is only possible to indicate the nature of expenditure incurred. The possible heads of expenditure would include -

---

(27) Duggal, 1986(a).

(28) N.H. Antia & R. Awasthi, "Health for All : Concept versus Reality". Paper presented at the Seminar on Health for All : Concept & Reality, (Bombay : Foundation for Research in Community Health, November 15-16, 1986), pp. 7-8.

(29) Ibid, p.7.

(a) Medicines;
(b) Investigative costs (X-rays, pathological tests, etc.);
(c) Access costs (transportation, etc.);
(d) Doctor's fees (consultation, etc);
(e) Surgery;
(f) Hospitalisation;
(g) Immunization;
(h) Contraception;
(i) Disability expenditure;
(j) Pregnancy expenditure;
(k) Special nutrition during illness, and so on.

Some estimates of household consumption expenditure on health derived from micro-level field studies are presented below:

(i) A study conducted in North Arcot (Tamil Nadu) in the early 70s (30) found, that an average family in the rural area spent on an average Rs. 80/-per annum. The proportion of total household income spent on medical care, varied from 7 per cent for the lowest income group to 2.5 per cent among the higher income group. Nearly 50 per cent of the families stocRed allopathic medicine, and 10 per cent stocked food supplements & tonics.

(ii) A study in two villages in Uttar Pradesh (31) found, that the per capita expenditure in the Western U.P. village was around Rs.11/- per month and in the eastern U.P. village, Rs. 6.90 per month. All the expenditure was incurred for curative purposes. A comparison of these figures with the U.P. Governments per capita health expenditure revealed that the individual family's per capita health expenditure was ten times that of the state government's expenditure on each individual.

(iii) The Foundation for Research in Community Health (FRCH) arrives at a much higher estimate of pivate household expenditure, made on the basis of two urban studies and one rural study. (32) In urban areas, middle-class citizens (all members of the Mumbai Grahak Panchayat with family annual incomes between Rs. 10,000 - 25,000), incurred a health expenditure of Rs. 240 per capita per annum (i.e. Rs. 1200 per family or 6.86 per cent of their average income and excluding reimbursements). In another study of class IV employees of a medical research institute (average income Rs. 7000 per annum), it was found that these families spent Rs. 176 (excluding reimbursements) per capita per annum. On this basis the urban private household expenditure on health care has been estimated at Rs. 208 per capita per annum. This entire amount went to the private health sector (private practitioners, private hospitals, diagnostics, drugs).

In the rural study undertaken by FRCH (33) in five districts of

---

(30) Rao et al., "Personal Health Expenditure among Rural Communities of North Arcot District", Indian Journal of Medical Research, Vol.61, No.7, 1973.

(31) Khan & Prasad, 1985, p.8-9.

(32) Duggal, 1986(a).

(33) A. Jesani, M. Gupte, R. Duggal, NGOs in Rural Health Care, Volume II, (Bombay : FRCH, forth-coming), quoted in Ibid, 1986(a).

Maharashtra, the private household expenditure on health care was estimated at Rs. 125 per capita per annum, for the year 1981-82.

B. Expenditure Incurred by Private Enterprises & Voluntary Organisations

A very small proportion of the population who are employees of private sector enterprises, & their families, receive partial or full medical benefits from their employers. The companies differ in the types of health care schemes offered to the employees. These include ESI facilities, medical reimbursements for the executive levelstaff, & the establishment of their own health care organisation comprising hospitals, clinics & dispensaries.

Some health expenditure data for selected private sector organisations is presented below :

(i) TELCO spent about Rs. 42.43 million in 1982-83 on health & family welfare services at the rate of Rs. 1,106/- per employee (including the employee's family). Out of this 32.6 per cent was spent on drugs & material supply under their own medical care organisation, and 10.6 per cent was spent on medical reimbursement. The Company's contribution towards ESI amounted to only 3.1 per cent of the total health expenditure. (34)

(ii) TISCO incurred an estimated health care expenditure of Rs. 130 to Rs. 140 million in 1983-84, distributed over its hospital, other centres, and the hospitals with the collieries & mines. (35)

The inputs of voluntary organisations running projects all over the country need analysis & documentation. A certain portion of this expenditure may be reflected in private consumption expenditure, but since many projects subsidise health care & do not require the recepient to pay for it, this overlapping category must be a small one.

C. Expenditure Incurred by Private practitioners and Private Institutional Facilities for Medical Care.

A third source of private expenditure are the private practitioners, which constituting the largest Chunk of private expenditure and instituttional facilities Private Institutional Facilities include -

(a) the clinics & consultancy of private practitioners;
(b) private hospitals;
(c) private nursing-homes;
(d) new diagnostic centres with the latest, advanced technology;
(e) health institutions owned & financed by the private corporate groups.

There is no documented data on the cost per bed or per patient in these private clinics & hospitals, which would enable a meaningful comparison between the expenditure patterns in the public & private sector.

However, their is a world-wide trend towards increased private corporate investment in health care, largely facilitated by modern technological advances in health. The U.S. has been the trend-setter in this development. For instance, between 1980 and 1984, corporate revenues in health care in USA grew from $ 25 billion to $ 118 billion, along with

---

(34) Khan & Prasad, 1985, p.105.

(35) Ibid, p.103.

increased monopolisation through mergers & take over. (36) In India, in the last two years, over Rs. 200 crores have been spent by the corporate sector in establishing diagnostic centres with CAT scanners and sophisticated pathalogical laboratories all over the country. Since 1982, the United Group has built up a chain of 46 diagnostic centres, involving an investment of Rs. 50 crores. (37) The Appollo Hospital Enterprises Ltd. (AHEL), Madras, is the first corporately managed, service oriented and profit generating hospital in India. (38)

---

(36) D. Stoesz, "Corporate Welfare : The Third Stage of Welfare in the United States", Socia Work, July-August 1986. Cited in Duggal, 1987 (forth coming).

(37) "The Corporatisation of medicare", Special Report, Business India, December 29, 1986 - January 11, 1987, pp. 78-81.

(38) "Apollo : medicare goes corporate", Special Report, Business India, December 20, 1982 - January 2, 1983, pp. 70-89; Business India, 1986-87.

IV

COMMUNICABLE AND NON COMMUNICABLE DISEASES

1. Introduction 60

2. Communicable Diseases
   a. Malaria 65
   b Tuberculosis 72
   c. Filariasis 75
   d. Leprosy 77

3. Non Communicable Diseases
   a. Cardio vascular diseases(CVD) 81
   b. Cancer 82

COMMUNICABLE & NON-COMMUNICABLE DISEASES

1. INTRODUCTION:

In India, as in most developing countries, communicable diseases continue to be the main causes of morbidity & mortality. The high incidence of communicable diseases, themselves viral, bacterial & parasitic in origin, is in turn due to the poverty & poor nutritional status of the people, and to environmental factors such as poor sanitation & the lack of safe drinking water. According to the health statistics provided by the Director General of Health Services, the major killing & maiming diseases that affect the people are tuberculosis, tetanus, acute respiratory infection, gastro-enteritis, measles, malaria, leprosy, poliomyelitis & filariasis. Table I indicates the estimated prevalence of and deaths per annum from a few major diseases in India. (1)

Table I : COMMUNICABLE DISEASES IN INDIA : PREVALENCE & MORTALITY OR DISABILITY.

	DISEASES	ESTIMATED PREVALENCE	ESTIMATED DEATHS PER ANNUM
1.	Tuberculosis	10,000,000	500,000
2.	Neonatal Tetanus	-	250,000 (1981)
3.	Diarrhoeal Diseases	-	1,500,000 (0-5 yrs)
4.	Measles	960,000 (1977)	780,000
5.	Malaria	1,600,000 (1983)	172 (1982 provisional)
6.	Filariasis	14,000,000	-
7.	Leprosy	4,000,000	-
			Estimated disability per annum
8.	Poliomyelitis		2 lakhs

Source : "A Profile of Common Diseases in India", Future, 13, Winter, 1984-85, p.43;
\+ : "Issues in Immunization", Future, 17, winter, 1985-86, p.42.

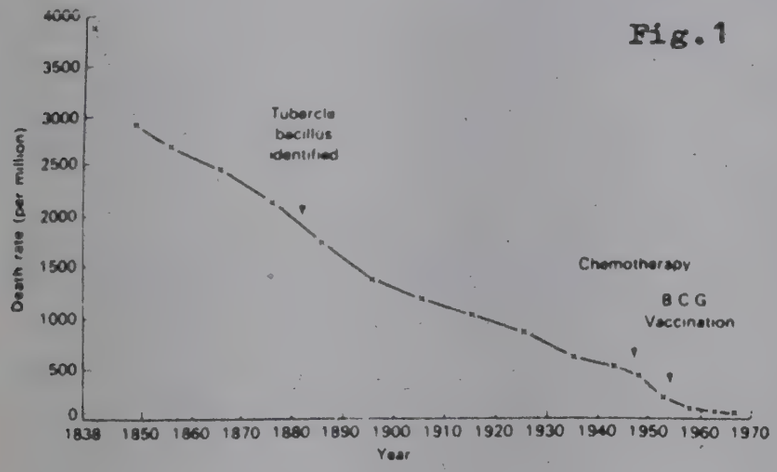
The Western countries had a similar disease profile in the last century. According to western authors like Mckeown, (2) these disease were eradicated in the west before the advent of modern preventive & curative medical technology & the decline had commenced even before the cause of the diseases was known. (Figs 1 and 2) The improvements in nutrition & other social conditions were the main factors contributing to this dramatic

(1) See the chapter on Health of Women & Children in this issue, for data on the six diseases (diphtheria, whooping cough, tetanus, tuberculosis, measles & poliomyelitis) identified for the worldwide immunization programme, the Expanded Programme on Immunization (EPI).

(2) T. McKeown, "The Medical Contribution". In N.Black, D. Boswell, A.Gray, S. Murphy & J.Popay (eds), Health & Disease. A Reader, (Milton Keynes: Open University Press, 1984), pp.107-114.

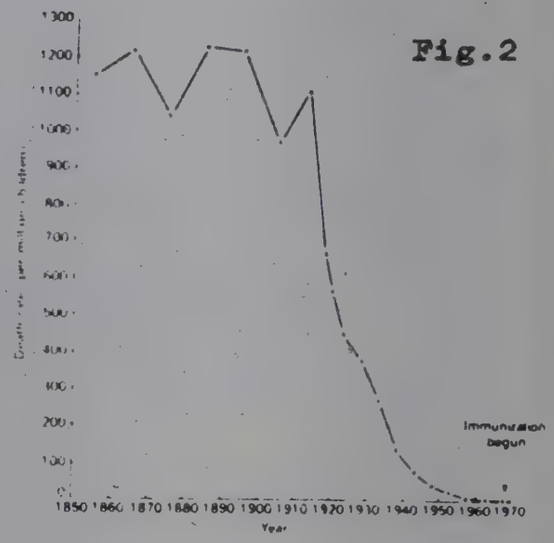
decline & to the growth of population. In more recent times China has demonstrated that these diseases can be controlled through social inputs & providing the basic needs of life to her people. (3) Although the incidence of these diseases has declined since the pre-independence period in India, they continue to take an unnecessarily high toll in terms of morbidity & mortality. For most of these sufficient knowledge is available regarding their causation, as also simple & relatively cheap technologies for their prevention, control and treatment.

Fig.1



Respiratory tuberculosis: death rates, England and Wales

Fig.2



Measles: death rates of children under 15, England and Wales

Source: McKeown, 1984, Fig.8.1,p.92 and Fig.8.14, p.105.

Plague has almost disappeared from the country (Box 1), the world wide campaign under the aegis of the WHO has succeeded in eradicating small-pox (Box2), and there has been a steady decline in the incidence of cholera since the beginning of this century. (Box 3)

Non-communicable diseases, particularly cardiovascular diseases & cancer which constitute the leading causes of morbidity & mortality in the developed countries, are increasingly becoming major health problems in India. Blindness, goitre, environmentally caused toxic syndromes, neurological & mental illnesses, genetic disorder and oral health are other health problems in this category.

The data on the incidence and prevalence of particular diseases in India and their distribution in different parts of the country is scanty and dispersed. The available data relates to the reported cases at hospitals dispensaries, (that too, mostly at the Government ones), and is, therefore, a gross underestimation of the magnitude of the disease in the population. Very often different government statistics are contradictory.(4) There are no country-wide epidemiological studies, only area-specific micro-studies, which are not adequate to give a picture of the distribution and magnitudee

---

(3) See chapter on "Health care in People's Republic of China" in V.Djukanovic & E.P.Mach (eds), Alternative Approaches to Meeting Basic Health Needs in Developing Countries, A joint UNICEF/WHO Study, (Geneva: WHO, 1975), pp. 35-50; V.W. Sidel & R. Sidel, "The Health by the People, (Geneva: WHO, 1975), pp.1-12.

(4) R.N. Basu, 11 Surveillance of EPI Target Disease", (Calcutta : All India Institute of Hygiene & Public Health, unpublished).

Box 1 : PLAGUE : DECENNIAL MORTALITY TRENDS IN INDIA (1898-1958)

PERIOD	TOTAL DEATHS FROM PLAGUE	AVERAGE ANNUAL DEATH RATE PER 100,000 POPULATION
1898-1908	6,032,693	183.3
1909-18	4,221,529	133.8
1919-28	1,762,718	51.9
1929-38	422,880	11.7
1939-48	268,596	6.8
1949-58	59,050	1.8
1959-64	-	0.04

1. There have been fluctuations in the trend of progressive decline in the decennial mortality rate. The last such fluctuation was between 1945-47 when the toll of deaths rose to 75,274. The main regions affected were Punjab, Uttar Pradesh and Bombay followed by Bihar, Orissa, Central Provinces, Hyderabad & Mysore States.

2. The decline in morbidity & mortality accelerated further after 1950. Only 11 cases and 8 deaths were recorded in 1966 in one isolated location in North India.

Source : M. Dutta & V.P. Bhasin, Communicable Diseases Pattern of Morbidity & Mortality in India, (New Delhi: CBHI, DGHS, MOHFW, 1979), P.6.

Box 2 : CHOLERA : INCIDENCE & MORTALITY DURING EPIDEMIC YEARS: 1950-77

EPIDEMIC YEAR	REPORTED CASES	DEATHS	DEATHRATE PER 100,000 POULATION
1950 (non-epidemic)	1,76,307	86,997	24.39
1953	2,10,239	95,323	25.31
1958	66,076	28,180	6.78
1961	47,637	16,334	3.72
1963	56,988	20,309	4.40
1968	22,583	4,472	0.86
1973	40,855	5,308	0.93
1978 (non-epidemic)	10,585	251	0.04

1. During 1961-65, India alone was responsible for almost 74 per cent of all cholera cases reported in the world, & nearly 85 per cent of all reported world deaths.* The country had earned the unenviable title of being the 'home of cholera'. The role of rail, river & road traffic, festivals & fairs, absence of proper environmental sanitation, deficiency of the epidemiological intelligence system & delayed reporting were some of the reasons enumerated for the recurrence of cholera epidemics in India.**

2. There has been a steady decline in the incidence of, & mortality from, Cholera. Combat Teams are being established in the endemic districts of the country. However preventive health measures such as the schemes for protected water supply & sanitation and simple remedies such as the oral rehydration therapy (ORT), are the best method of combating cholera & other enteric diseases.

Source : Dutta & Bhasin, 1979, pp. 2-3;

* : K.C. Patnaik & P.N. Kapoor, Statistical Review of Cholera Problem in India, with particular reference to its endemicity & epidemicity, (New Delhi:CBHI, 1967);

** : ICMR, Report of the Expert Committee on Control of Small-pox & Cholera in India, (New Delhi: ICMR, 1959).

BOX 3 : SMALL-POX : INCIDENCE & MORTALITY BETWEEN 1950-75

YEAR	REPORTED CASES	DEATHS	ATTACK RATE PER 100,000 POPULATION	DEATH RATE PER 100,000 POPULATION
1950	157,487	41,201	44.14	11.55
1951	253,332	94,580	70.18	26.20
1958	168,216	45,848	39.55	10.98
1963	83,423	26,360	18.10	5.72
1967	83,943	26,225	16.64	4.19
1974	188,003	31,262	32.30	5.30
1975	1,436	196	0.20	0.03

1. India has been one of the world's principle endemic areas of small-pox. Since 1900 major epidemics had been recorded every five to seven years.

2. The National Small-pox Eradication Programme was launched in 1962. It emphasized the systematic immunization of the population with the freeze-dried vaccine. In 1969 the strategy was redirected by giving equal emphasis to surveillance & containment of all detected cases along with vaccination.

The Intensified Campaign against small-pox was undertaken in 1973 in collaboration with the WHO & the State Govenments. It included the active search for smallpox cases through the offer of a monetary award (increased to Rs.1000) to the first person reporting a case. The last case of smallpox was reported in India on May 24, 1975. During 1976-77, health workers were required to carry out periodical house-to-house searches & report all cases of fever with rash so that no smallpox case was missed. After two years of intensive surveillance following the last known case, an International Assessment Commission certified eradication of the disease in India. Surveillance still continues, all cases are investigated and primary vaccinations are given to children before the age of one year.

Source : Dutta & Bhasin, 1979, pp.4-6.

of the diseases for the country as a whole. Or, as in the case of TB, the magnitude of the problem has been calculated on the bases of the findings of a national Sample Survey undertaken between 1955-58 and subsequent small surveys. (4a)

National Diseases Control Programmes

As communicable diseases formed the main health problems in India, separate country-wide 'vertical' programmes for the prevention, control & eradication of communicable diseases were launched against malaria, smallpox, tuberculosis, leprosy, filariasis, trachoma and cholera. Subsequently, certain nutrition-deliciency disorders such as Goitre, and non-communicable problems such as mental health were brought under national control programmes. At present the following national programmes for the control of communicable & non-communicable diseases are being sponsored by the centre - (5)

1. National Tuberculosis Programme (NTP)
2. Diarrhoeal Diseases Control Programme
3. National Malaria Eradication Programme (NMEP)
4. National Filaria Control Programme (NFCP)
5. National Leprosy Eradication Programme (NLEP)
6. National Programme for Prevention of Blindness (NPPB)
7. National Goitre Control Programme (NGCP)
8. Guinea-worm Eradication Programme
9. Sexually Transmitted Diseases Control Programme
10. Mental Health Programme
11. Expanded Programme of Immunization (EPI)

This chapter deals with some of the major communicable & non-communicable diseases in India, particularly those covered by national control programmes. However not all the national programmes are discussed as these have been taken up in different chapters in this volume. (6)

2. COMMUNICABLE DISEASES

A. MALARIA

As early as 1935, the first Director of the Malaria Institute of India, Brig J.A. Sinton, had estimated that at least 100 million Indians suffered from malaria annually. He reported a loss of efficiency in 18 million workers out of an agricultural population of 35 million in one State alone. (7) The disease was also responsible for the delay and disruption of scores

---

(4a) P.G. Kamath, Treatment of Tuberculosis, (Bombay: Bhalani Publishing House, 1979), pp.1-2.

(5) GOI, Ministry of Health & Family Welfare, Annual Report 1984-85, (New Delhi: MOHFW, 1985),pp. 28-40; GOI, Planning Commission, Seventh Five Year Plan 1985-90, (New Delhi: Planning Commission, 1985), p.271.

(6) See the chapter on 'Nutrition' for a duscussion of the problems of nutritional blindness & goitre; the chapter on 'Health of Women & Children for a discussion of diarrhoeal diseases and the Expanded Programme of Immunization(EPI); and the section on Water & Sanitation in the chapter on 'Environment & Health'.

(7) J.A. Sinton, "What Malaria Costs India, Nationally, Socially and Economically", Record Malaria Survey of India, 5, 1935, pp.223-264.

of vital engineering, construction, mining and other projects.(8) The Bhore Committee had recommended the co-ordination of all anti-malarial work within a central organization -the Malaria Institute of India (9) Following partition in 1947, epidemiological assessment placed the number of cases at 75 million; malaria had become the single largest threat to the people's health.

The discovery of DDT, a long acting insecticide, was the starting point of organized, world wide anti-malarial campaigns; (10) the WHO Expert Committee reports on Malaria made a series of recommendations related to the epidemiological, operational and administrative aspects of the campaign and provided some guidelines and parameters for measuring their success. (11)

In India the National Malaria Control Programme (NMCP) was launched in 1953. Initially it was designed to protect the population living in endemic areas by drastically reducing the transmission of the disease through the periodical spraying of all households with DDT. The response was so good, that more than the targeted number of NMCP units had to be allotted in the first year itself, and between 1953-57, 200 NMCP units were set-up. (12) These early efforts showed good results; between 1953-57, the incidence of malaria declined by more than 50 per cent in the endemic area.

The success of the NMCP and the danger of Vectors developing resistance to DDT, led to the idea of converting the 'control' programme into an eradication programme. This idea was discussed at the IVth International Congress of Tropical Medicine and Malaria held at Washington D.C. in 1955. At the Nineth Regional Committee session of South-East Asia Region of the WHO in New Delhi in 1956, malaria eradication was made the goal. (13)

The National Malaria Eradication Programme (NMEP) was launched in 1958, with the objective of achieving eradication by 1966. Technically, four phases of the programme were clearly identified : the preparatory phase, the attack phase, the consolidation phase and the maintainance phase. A time limit was set for the completion of each phase.

Since considerable experience had already been gained under the NMCP, the preparatory phase was omitted. In 1958, the attack phase was launched

---

(8) D. Clyde, Report on the Control of Malaria during the Sarada Canal Construction 192(1929, Record Malaria Survey of India, 2, 1931, pp.49-110; R.A. While, Sr., "Malaria a Delhi-Its incidence and causation", Record Malarial Survey (India), 1, 1930, pp.291-355.

(9) Government of India, Health Survey and Development Committee (Bhore Committee): Report Vol.I, (New Delhi: Manager of Publications, 1946).

(10) A. Noguer, "Malaria - Cause for Alarm", World Health, April 1978.

(11) World Health Organisation, ECM-IV Report, Technical Report Series No.123, (Geneva:WHO 1957); WHO, ECM, VII Report, Technical Report Series No.205 , (Geneva: WHO, 1964); WHO ECM-X Report Technical Report Series No.272, (Geneva: WHO, 1964).

(12) GOI Directorate General of Health Services, Manual of Malaria Eradication Operation, (Ne Delhi: Ministry of Health, 1958).

(13) Dr. V.N. Rao, Written Communication dated 3rd December 1984.

with the establishment of 230 units covering a population of one million. (14) In the following year another 160 units came into existence. DDT spraying operations were carried out in this period; the duration of spraying varied according to the endimicity of the disease in that area, so that entry into the consolidation phase was staggered.

The decision to interrupt the spraying operation and enter into the consolidation phase was based on the appraisal of the operation by an independent team of experts. (15) For evaluation purposes, certain technical and administrative criteria, such as epidemiological conditions, adequacy of case detection machinery and the availability of general health services, defined by the WHO were used. A similar procedure was to be adopted before a Unit was allowed to enter the maintainance phase.

The NMEP was the largest of the Eradication/Control programmes. The programme produced spectacular results. The number of malaria cases decreased from the 1947 estimate of 75 million per year to less than 0.1 million, and annual mortality fell from the original 0.8 million to almost zero. Less than a lakh of cases were reported in 1965, and malaria was considered to be on the point of eradication. (16)

However the programme suffered serious setbacks, mainly in Madhya Pradesh, Gujarat and parts of Rajasthan and Uttar Pradesh. The entire epidemiological trend was reversed in 1966, when the incidence of malaria cases rose from 100,000 cases annually between 1963-65, to 1,49,102 cases. There was a sustained increase thereafter reaching a climax in 1971, and from 1974 onwards deaths due to malaria once again began to be reported (See Table II). The subsequent years show a steady decline. (17) According to Banerji, "The fact that the number of deaths continued to increase even after case incidence notes declined much below the 1971 rate indicates a grave aspect of the problem: the large number of cases due to P. Falciparum and the growing resistance of the parasites to antimalarials". (18) The extent of resurgence has been the largest in Gujarat, Haryana, Orissa, Punjab, Uttar Pradesh, Maharashtra, Karnataka, Madhya Pradesh and the union territory of Delhi, while Orissa and the north-eastern states have accounted for the largest number of malaria deaths, (Table II). However areas in Kerala, Tamil nadu, West Bengal and Bihar are no longer malaria endemic.

---

(14) P.K. Dutta, A Study of Factors Responsible for Set-back of National Malaria Eradication Programme at Unit Level in Gurgaon District, (New Delhi: Ph.D Thesis submitted to JNU, 1980),p.9.

(15) Government of India, Report of the special committee on the Preparation of the NMEP into the Maintainance phase (Chadha Committee), (New Delhi: Ministry of Health & Family Welfare, 1963).

(16) Dutta, 1980, p.10; M. Dutta & V.P. Bhasin, Communicable Diseases Pattern of Morbidity & Mortality in India, (New Delhi: CBHI, DGHS, MOHFW, 1979), p.8.

(17) Government of India, Directorate General of Health Services, Pocket Book of Health Statistics of India - 1981, (New Delhi: Central Bureau of Health Intelligence, 1982), p.115.

(18) D. Banerji, Health and Family Planning Services in India, (New Delhi: Lok Paksh, 1985), p.100.

Table II : TREND OF MALARIA INCIDENCE IN INDIA - 1961-1983

YEAR	INCIDENCE	DEATHS	ANNUAL PARASITE INDEX (API)	AVERAGE BLOOD EXAMINATION RATE (ABER)
1961	49,151	-	0.13	3.50
1962	59,575	-	0.14	6.43
1963	3,07,306	-	0.20	9.08
1964	1,12,942	-	0.25	9.77
1965	99,667	-	0.22	8.71
1966	1,48,012	-	0.3	8.37
1967	2,78,214	-	0.57	8.26
1968	2,74,634	-	0.55	8.36
1969	3,47,975	-	0.68	8.14
1970	6,94,017	-	1.32	7.77
1971	13,22,398	-	2.47	7.56
1972	14,28,649	-	2.61	7.17
1973	19,30,273	-	3.46	7.59
1974	31,67,658	3	5.59	7.86
1975	51,66,142	99	9.10	9.12
1976	64,67,215	59	11.25	8.89
1977	47,40,900	55	7.56	9.14
1978	41,44,385	74	6.53	8.22
1979	30,64,697	196	N.A.	N.A.
1980	28,96,000	207	4.6	N.A.
1981	26,79,795	170	N.A.	N.A.
1982	21,82,303	187	N.A.	N.A.
1983 (Provisional)	19,11,149	178		

Sources : (Columms 1 and 2): GOI, DGHS, CBHI, Health Statistics of India 1984, (New Delhi: Ministry of Health and Family Welfare, 1984), p.173.

The failure of the NMEP was examined and analysed by various committees, viz, the Madhok committee in 1967, the First Indepth Evaluation Committee (1978), the Consultative Committees of Experts (1974) and the Second Indepth Evaluation Committee (1974).(19) These committees listed the following resons for the failure of the programme:

1) Shortage and untimely supply of materials, including equipment and insecticide.
2) Shortage of manpower and staff.
3) Development of insecticidal resistance by vectors.

9) Government of India, Report of the Special Committee Constituted to Review the Working of the NMEP and to Recommend Measures for Improvement (Madhok Committee), (New Delhi: MOHFW, 1970); GOI, Report of the First Indepth Evaluation of NMEP of India (Chairman T. Ramachandra Rao), (New Delhi: Ministry of Health & Family Planning, 1970); GOI, Report of Consultative Committee of Experts to Determine Alternative Strategies Under NMEP (Rao Committee), (New Delhi: Ministry of Health and Family Planning, 1974); GOI, Report of the Second Indepth Evaluation of NMEP in India, (New Delhi: Ministry of Health and Family Planning, 1974).

4) Emergence of drug resistance in certain parts of India.
5) Operational problems due to poor communication, floods, forests, monsoon and rough terrain.
6) Habit of mudplastering or lime - washing of houses immediately after spray, due to religious or cultural reasons.
7) Movement of population.

A revised strategy, the 'Modified Plan of Operation' for Malaria Control (MPO) was launched in April 1977, based on the recommendations of the 1974 committees. Its major objectives were:

(1) To prevent deaths and reduce the period of morbidity due to malaria.
(2) To maintain industrial and farm production by undertaking intensive anti-malarial measures in such areas.
(3) To consolidate the past achievements. The objective now was not eradication but control of malaria.

The major practices adopted inclue: (20)

(1) The regular residual insecticidal spraying with appropriate insecticides in areas with annual parasitic incidence (API) of 2 or more;
(2) full surveillance, including local spraying in areas with less than 2 API;
(3) a special campaign for the control of P. Falciparum in the north-eastern region. Eighteen districts have been chosen and control programmes have been intensified with the assistance of WHO & SIDA. More districts of Orissa, Bihar, Madhya Pradesh & West Bengal have been covered under the project since November 1978; (21)
(4) Provision of adequate quantities of the appropriate insecticides and anti-malarials to the States. Over 200,000 Drug Distribution Centres (DDCs) and Fever Treatment Depots (FTDs) were planned to be managed by voluntary organisations;
(5) a step-up in research effort. 72 Zonal Teams have been set up for undertaking continuous studies on entomological and epidemiological aspects.

In the Sixth Plan (1980-85), Rs. 400 crores, or 76% of the existing health budget for the control of communicable disease, has been earmarked for malaria alone. (22) Yet the fever continues to take its toll of victims. In 1981 over 26 lakh cases were reported, as against 14 lakhs ten years ago. (See Table III for the statewise trend of positive malaria cases - 1977, 1981, 1982 and 1983).

Apart from technical and operational problems such as vector resistance to traditional insecticides and the rising cost of petroleum based insecticides, the inadequacies in the health care delivery system has also contributed significantly to the set back in malaria eradication. An indepth study of the NMEP at unit level in one district demonstrated that

---

(20) Government of India, Planning Commission, The Sixth Five Year Plan 1980-85, (New Delhi : Planning Commission, 1981) 370.

(21) Dutta and Bhasin, 1979, pp. 8-9.

(22) GOI, Planning Commission, 1981, p.370; GOI, DGHS, Health Statistics of India 1981, (New Delhi: Ministry of Health and Family Welfare, 1982), p.477.

Table III : STATEWISE POSITIVE CASES OF MALARIA 1977, 1981, 1982, 1983.

S.No.	States/union-territory	1977		1981		1982		1983	
		C	D	C	D	C	D	C	D
1.	Andhra Pradesh	1,14,620	-	38,234	-	34,942	-	36,386	-
2.	Assam	96,771	36	58,106	49	61,799	27	48,146	16
3.	Bihar	41,097	-	61,111	5	49,100	7	25,938	6
4.	Gujarat	7,22,687	-	4,12,447	-	3,32,984	-	2,81,060	-
5.	Harayana	7,89,063	2	3,05,993	-	1,85,447	1	1,37,499	2
6.	Himachal Pradesh	42,154	-	85,534	-	48,708	-	38,947	-
7.	Jammu & Kashmir	37,697	-	5,703	-	7,042	-	9,901	-
8.	Karnataka	5,36,404	-	1,58,008	-	1,02,299	-	60,342	-
9.	Kerala	5,468	-	4,127	-	3,981	-	3,175	-
10.	Madhya Pradesh	3,65,077	-	3,20,742	16	2,28,982	28	1,51,569	13
11.	Maharashtra	3,40,071	-	1,10,552	-	84,814	5	82,983	1
12.	Manipur	1,082	-	1,265	2	2,342	5	1,553	1
13.	Meghalaya	9,812	-	16,703	1	16,710	5	11,381	1
14.	Nagaland	3,805	-	7,401	2	6,814	-	4,596	-
15.	Orissa	2,12,337	-	2,94,958	51	2,96,400	43	2,33,064	31
16.	Punjab	5,29,147	-	2,32,071	-	2,07,925	-	1,74,172	
41.	Rajasthan	2,31,862	-	99,001	-	75,320	1	1,14,089	-
18.	Sikkim	98	-	40	-	49	-	35	-
19.	Tamil Nadu	83,300	-	71,517	-	65,797	-	67,192	-
20.	Tripura	4,332	5	6,182	13	10,596	17	10,346	-
21.	Uttar Pradesh	4,33,944	-	1,75,930	-	1,70,233	-	2,62,051	1
22.	West Bengal	15,722	1	29,068	4	34.237	21	34,018	3
23.	A. & N. Islands	2,820	1	4,610	4	3,470	1	6,455	
24.	Arunachal Pradesh	24,571	9	34,143	6	32,148	4	26,787	1
25.	Chandigarh	34,624	-	34,351	-	26,125	-	23,306	-
26.	D. & N. Havelli	20,510	-	3,198	-	1.670	-	1,660	-
27.	Delhi	1,78,196	-	62,415	-	18,035	-	36,585	39
28.	Goa, Daman & Diu	2,286	-	1.277	-	1,963	-	882	-
29.	Lakshdweep	97	-	-	-	46,530	-	5	-
30.	Mizoram	5,490	1	17,361	4	685	8	14,991	5
31.	Pondicherry	326	-	414	-	4	-	434	-
32.	Coal-fields	5,448	-	1,771	1	24,677	-	859	-
33.	DNK Projects	N.A.	-	25,562	12	474	14	9,787	15
	INDIA (TOTAL)	47,40,900	55	26,79,795	170	21,82,303	187	19.11,149	178

N.B. The above figures for 1983 are provisional and liable to change later on.

Source : GOI, DGHS, CBHI, 1981, (P.183).
GOI, DGHS, CBHI, 1984, pp.174 (for 1981-1983).

apathy and a lack of accountability on the part of the concerned personnel played a large part in its failure. (23) According to Banerji, ".... among other factors, adequate attention had not been paid to building a permanent health services system - the so called health infrastructure - strong enough to carry on the malaria surveillance work effectively at the village level. This was responsible for a series of setbacks in the NMEP, resulting in the reversion, at a very considerable cost, of large segments of the maintainance phase population to consolidation or attack phases". (24) Surveillance, in Malaria parlance, means malaria case detection through the collection of blood smears from fever cases ; the successful radical treatment with Chloroquine/Camaquine/Amidoquine of positive cases of malaria so detected; the institution of remedial measures such as spraying, mass blood survey, etc.; and the epidemiological investigation of the case to detect the source of infection. (25)

In order to reduce the dependence on chemical insecticides, research is being undertaken on biological control agents for vector control such as the indigenous strain of Bacillus thuringiensis, and B. Sphaericus - and the larvicidal fist, jambusea.

"Research has been initiated in India to find a way out of vector resistance and rising cost of chemical insecticides. The focus is on developing an effective microbial insecticide. The Vector Control Research Centre (VCRC) in Pondicherry will be conducting field trials on bacillus which it had isolated and developed to kill mosquite larvae. It is claimed that with this new biological method, the expense will be much less than DDT and Malathion and it will also not cause environmental problems. Tests carried out over a period of 2 years indicated that the Indian strain of Bacillus thuringiensis (BT) would be able to kill mosquite larvae within 3 to 24 hours in breeding areas. The Indian strain is called VCRC B-17. The VCRC strain is likely to cost 4 times less and is now awaiting the clearance of the Drug Controller of India". (Dr. V.N. Rao, written communication, dated 3rd December 1984).

The Strategy of Integrated Vector Control of Larvicidal fish jambusea Malaria, involving the raising of economic production, introduction of environmental improvement schemes & involvement of the community, has been successfully demonstrated in Kheda District of Gujarat, & is being extended to different regions of the country. Other vector control studies are being carried out in areas such as the Koraput district of Orissa, which have a very high incidence of P.Falciparum malaria with a high proportion of resistance to chloroquine. (26)

The Seventh Five Year Plan visualises intensification of malaria control in urban areas, and an in-depth review of the Modified Plan of Operations with a view to ensuring necessary technological and operational changes. (27)

---

(23) Dutta, 1980.

(24) Banerji, 1985, p.100.

(25) Government of Maharashtra, Manual of Primary Health Centre, (Nagpur: Government Press 1970), , 74

(26) Indian Council of Medical Research, Summary Highlighting ICMR Research Activities Durin the year 1986-87 (New Delhi, ICMR, 1986), pp.23-26.

(27) GOI, Planning Commission, 1985, p.275.

B. TUBERCULOSIS

The intial Tuberculosis control programme initiated after Independence, was based on mass BCG vaccination campaigns, using vaccine from the BCG laboratory at Guindy, Madras. The campaigns, launched in 1951, had two major objectives:

(i) preventing the development of tuberculosis among healthy non-infected persons; and
(ii) detecting affected persons so as to treat them effectively and make infectious cases non-infectious. (28) Between 1955-58, the ICMR conducted the first national T.B. sample survey which showed that 1.8% of the population above 5 years of age had X-ray positive disease, some 0.4 per cent were infectious cases, and the prevalence was similiar in rural and urban areas (29)

Research undertaken at the Tuberculosis Chemotherapy Centre, Madras, established by the ICMR in 1956, revealed that institutional treatment (i.e. in sanatoria) was unnecessary for the success of TB Chemotherapy. (30) The study was particularly significant in that it was undertaken in the poorer, underprivileged segments of the population. For the underdeveloped countries, its results demonstrated that TB control programmes would not be too costly to maintain or expand.

The Centre later developed into the Tuberculosis Research Centre, and was responsible for evolving many inexpensive, effective and practicable methods of treatment for TB patients. Invaluable knowledge of the principles of Chemotherapy and of the bacteriology of tuberculosis is the result of the investigations of this centre (M.D. Gupte, written communication).

The National Tuberculosis Institute (NTI) was opened at Banglore in 1958, with the objectives of mapping out an acceptable TB control programme, training of medical and paramedical workers and fostering research. In 1962 the National Tuberculosis Programme (NTP) was formulated. Intensive field investigations in rural and urban areas led to the formulation of the District TB programme (DTP) which forms the functioning unit of the NTP. The District Tuberculosis Officer is in overall charge of the programme in the district, and is assisted by a team comprising a laboratory technician, an x-ray technician, a treatment organizer and a statistical assistant. All undergo training at the National Tuberculosis Institute. The function of the District TB Centre is to organize and supervise the case-finding and treatment activity in all rural and urban health institutions.

In order to make the programme more effective and accessible, the programme has been modified to include village health guides. The health workers (both male and female) are expected to identify chest symptomatics

---

(28) M. Dutta and V.P. Bhasin, Communicable Diseases - Pattern of Morbidity and Mortality in India, (New Delhi: CBHI, 1979).

(29) Indian Council of Medical Research (ICMR), Tuberculosis in India - A Sample Survey 1955-56, (Special Report Series No.34), (New Delhi: ICMR, 1957).

(30) Tuberculosis Chemotherapy Centre (Madras), "A Concurrent Comparison of Home and Sanitorium Treatment of Pulmonary Tuberculosis in India", Bulletin World Health Organization, Vol.29, 1959, p.5.

in the village and refer them for sputum examination. They are also responsible for motivating the patients regarding regular treatment. (31)

By 1982, 17 TB demonstration centres, 353 Tuberculosis Clinics, 32[illegible] District TB centres and 44 beds had been established. (32) (See Table IV for the State-wise distribution of these institutions). By December 1978, 253.76 million people had been tuberculin - tested and 238.21 million people vaccinated with BCG since the inception of the campaign in the First plan. (33)

According to the estimates of the Director General of Health Services, there are about 10 million patients in India with x-ray positive pulmonary tuberculosis, a quarter (2.5 million) of them infectious. Some 500,000 deaths occur annually, most of them in children below 15 years. The incidence rate of infection is 0.8 per cent in the 0-4 year age groups; 1.[illegible] percent in the 5.9 age group; and 2 percent in the 10-14 age group. (34)

A major study conducted by the WHO through the ICMR in the Chinglepet District of Tamil Nadu found, that the BCG vaccine had no protective efficiacy at the end of 7 1/2 years. (35) However the WHO Study Group on BCG vaccination policies recommended its continuation for infants and children as it played a role in the prevention of severe forms of childhood TB. (36) It recommended a combination of case finding and chemotherapy as the best method of treatment. (37)

The WHO had recommended the integration of the TB programme into the general community health structure in order to increase the rate of early case finding. (38) This has been attempted in the National TB control Programme.

There is an urgent need for indepth epidemiological studies to understand the current nature of the disease, and for field operations research to develop effective methods for the early detection of cases and for regular and continuous treatment, according to the ICMR/ICSSR Study Group. (39)

---

(31) National Tuberculosis Institute, Defeat TB Now & Forever, (New Delhi: Directorat[illegible] General of Health Services, 1985), pp 15-16

(32) GOI, DGHS, 1983, p.120.

(33) Dutta and Bhasin, 1979, p.13.

(34) "A Profile of Common Diseases in India:, Future, 13, Winter, 1984-85, p.43.

(35) WHO, "Tuberculosis Prevention Trial", WHO Bulletin, 57, 1979, p.819.

(36) WHO, BCG Vaccination Policies: Report of A WHO Study Group, Technical Report Serie[illegible] No.652, (Geneva: WHO, 1980).

(37) WHO, Report of a Joint IVAI/WHO Study Group - Tuberculosis Control, Technical Repor[illegible] Series No. 671, (Geneva, WHO, 1982).

38) WHO, Expert Committee on TB - IX Report, Technical Report Series No.552, (Geneva: WHO[illegible] 1974).

(39) ICMR/ICSSR, Health for All - An Alternative Strategy, (New Delhi: ICMR/ICSSR, 1981).

Table IV : NATIONAL TUBERCULOSIS CONTROL PROGRAMME : TREATMENT FACILITIES AVAILABLE FOR TREATMENT OF TB PATIENTS, 1982.

SL.	NAME OF STATE/ UNION TERRITORY	TB DEMONSTRATION CENTRES	TOTAL NO OF OTHER TB CLINICS	DIST TB CENTRES	NO. OF TB BEDS
1.	Andhra Pradesh	1	26	23	2699
2.	Assam	1	8	10	799
3.	Bihar	2	18	25	1912
4.	Gujarat	1	6	19	3488
5.	Haryana	-	5	9	295
6.	Himachal Pradesh	-	10	8	643
7.	Jammu & Kashmir	1	5	9	655
8.	Karnataka	1	5	19	3373
9.	Kerala	1	11	10	2537
10.	Madhya Pradesh	1	7	45	1911
11.	Maharashtra	1	27	26	7234
12.	Manipur	-	1	2	110
13.	Meghalaya	-	-	2	304
14.	Nagaland	-	2	1	100
15.	Orissa	1	2	13	801
16.	Punjab	1	6	10	921
17.	Rajasthan	1	2	26	2024
18.	Sikkim	-	4	1	100
19.	Tamil Nadu	1	41	15	3569
20.	Tripura	-	-	2	50
21.	Uttar Pradesh	1	19	56	3437
22.	West Bengal	1	102	16	5948
23.	A.&.M Island	-	1	1	67
24.	Arunachal Pradesh	-	4	1	182
25.	Chandigarh	-	-	1	10
26.	Dadra & Nagar Haveli	-	-	-	-
27.	Delhi	1	11	1	1539
28.	Goa, Daman & Div	-	3	1	276
29.	Lakshadweep	-	-	-	-
30.	Mizoram	-	1	1	92
31.	Pondicherry	-	3	1	178
	TOTAL	17	330	354	45254

Source : GOI, DGHS, CBHI, Health Statistics of India 1984, (New Delhi: Ministry of Health Family Welfare, 1984), p.184.

Developments in Chemotherapy:

The primary drugs in the NTP are streptomycin (S), isoniazid (Iso-nicotine acid hydrazide or INH) and PAS (Para-amino-salicytic acid) or thiacetazone (T). The drug regimen consists of an initial intensive phase of two to three months with the above three drugs followed by 16 months of daily use of isoniazid and PAS or Thiacetazone.

With the appearance of Rifampicin (R) in 1970, it became clear that the duration of the treatment could be shortened to six to nine months. Rifamycin is the most powerful TB drug & in combination with INH, is capable of sterilizing the tubercular lesion of all bacteria completly & quickly. The main drawback of this drug is its prohibitive cost, yet this appears to be balanced by the possibility of a shorter duration of treatment which will help to overcome the problem of drug defaulting by patients - the single most important cause of failure of chemotherapy in the NTP. (40) The Tuberculosis Research Centre (TRC), Madras, has undertaken field studies to introduce and evaluate shortcourse Chemotherapy for TB in 18 districts in India. The TRC is also investigating intermittent regimens and conducting studies on patient compliance. (41)

C. FILARIASIS

About 14 million persons in India have filiariasis, while some 18 million are micro-filaria carriers. (42)

In 1963, there were 25 million people at risk from filaria. By 1977, an estimated 304 million people were living in endemic areas, (43) of which 62 million were in urban areas. Uttar Pradesh, Bihar, Andhra Pradesh, Tamil Nadu and West Bengal are states with a high number of population at risk. The increasing magnitude of the problem can be gauged from a comparison with the 1971 figure of 8 million filiarisis patients. (44) The disease, considered chiefly as an urban phenomenon, has been observed to be spreading to rural areas as well.

The Indian Council of Medical Research (ICMR) had in 1950, initiated methods for the control of filarias based on synthetic insecticides and the drug hetrazan. In 1955 the National Filaria Control Programme (NECP) was launched; its objective was to break the transmission of infection through:

(i) mass drug administration;
(ii) anti-larval measures; and
(iii) measures against adult mosquitoes, as in the malaria control programme. (45)

At present Diethylcarbamazine citrate (DEC-C) is the drug of choice in the treatment of all forms of filariases. Uptill 1978, 16 States/union

---

(40) M.D. Deshmukh, "Pulmonary Tuberculosis", in S.J. Shah (ed), API Textbook of Medicine, Fourth Edition, (Bombay: Association of Physicians of India, 1986), pp.302-303.

(41) Indian Council of Medical Research, 1986, pp. 12-13.

(42) Dutta and Bhasin, 1979.

(43) Future, 1984-85, p.43.

(44) P.N. Waki, "Forward", in ICMR, Assessment of National Filiaria Control Programme (India) 1961-70, (New Delhi: ICMR, 1971).

(45) Banerji, 1985, p.124.

territories had been covered by the NFCP. 173 Filaria control units, mainly in urban areas, and 22 Filaria Survey Units had been established. The former undertakes recurrent anti-larval measures with mosquito larval oil, and the latter serves to delineate the extent of the problem in unsurveyed areas and states with certain filariometric indices. The population covered by each control unit varies from 20,000 to 20 lakhs and above. A total of 24 million people had been protected by NFCP by December 1981 (See Table V). However, in terms of providing protection to the total population at risk, the programme does not seem to have achieved much success.

Table V : POPULATION PROTECTED AND THE SET UP ON 31ST DECEMBER 1983 UNDER NATIONAL FILARIA CONTROL PROGRAMME

SL. NO.	STATE/UT	POPULATION PROTECTED (million)	SET UP AS ON 31.12.1983			
			FILARIA CONTROL UNITS	H.Q. BUREAU	SURVEY UNITS	FILARIA CLINICS
1.	Andhra Pradesh	3.87	24	1	2	4
2.	Assam	0.19	1	–	1	–
3.	Bihar	5.54	27	1	2	8
4.	Gujarat	3.12	8	1	4	4
5.	Karnataka	0.61	6	1	1	7
6.	Kerala	2.89	17	1	–	6
7.	Madhya Pradesh	0.44	9	1	3	7
8.	Maharashtra	2.51	11	1	5	5
9.	Orissa	1.10	14	1	2	10
10.	Tamil Nadu	5.59	19	1	1	33
11.	Uttar Pradesh	4.92	22	1	2	1
12.	West Bengal	1.00	10	1	4	1
13.	A & N Islands	0.06	1	–	–	1
14.	Goa, Daman & Div	0.20	6	1	–	8
15.	Lakshadweep	0.04	1	–	–	–
16.	Pondicherry	0.30	2	–	–	–
	Total	32.38	178	12	23	103

Source : GOI, DGHS, CBHI, 1984.

The ICMR evaluation of the NFCP in 1960, identified the main hurdles to the successful implementation of the programme as – (a) shortage in the supply of larvicidal oil; and (b) inadequacy of staff and consequent inadequate supervision. Due to the breakdown in antilarval operations, the mosquito density indices shot up considerably, thus undoing the work of years of spraying. The programme was carried out mechanically, without any periodical assessments or variations to suit the local conditions. There was a lack of co-ordination among organizations such as the public health departments, the railways and the local bodies.

The Expert Committee of the ICMR again assessed the NFCP in 1971. Among the 67 units studied in 14 different States and Union territories, only 22 were rated as having performed well, and not a single unit had an adequate staffing pattern. (46)

(46) Indian Council of Medical Research, Assessment of the NFCP (India) 1961-70, Technical Report Series No.10, (New Delhi: ICMR, 1971)

The geographical area affected by filariasis is increasing with the movement of population from endemic areas, rural-urban labour migration and the water logging promoted by large dams & extensive canal irrigation. The Rural Filaria Control Projects have been started on an experimental basis for the detection and treatment of micro-filaria carriers in Srikakulam district of AP, Bulsar district of Gujarat and Jaunpur district of UP. The Sixth Five Year Plan decided to integrate Malaria and Filaria control measures into a composite programme for the maximum utilization of available resources and effective implementation in urban areas. (47)

D LEPROSY

According to the 1981 census, about 400 million people are living in hyper endemic zones of leprosy & run the risk of infection. Projected on the basis of the 1981 census population, there are an estimated 4.2 million leprosy patients in India at an average prevalence rate of 5.77 per 1000 population. (48) Some 25 per cent of the total cases have deformities of varying degrees, 20 per cent are children below the age of 15 years and 15-20 per cent are infections. Nearly half the total cases are concentraed in the states of Tamil Nadu (7.33 lakhs) and Andhra Pradesh (6.28 lakhs). These along with West Bengal, Bihar, Maharashtra, Orissa and Uttar Pradesh, account for 91.5 per cent of the cases in India. (Table VI).

About 4 lakh new cases develop annually and about 3 lakh cases are eliminated either due to cure or death. (49)

The National Leprosy Control Programme (NLCP) was launched in 1954-55 during the last year of the First Five Year Plan. Survey, Education and Treatment has been the basis of NLCP. The programme aimed at -

(i) Detection of all cases, especially those of the infectious type, at as early a stage as possible.
(ii) Provision of treatment facilities to all patients so detected, and
(iii) Health education to create a favourable atmosphere, which would help both in case detection and case holding programmes. (50)

The objective is to reduce the prevalence rate to less than one case per 1000 population, and to ultimately rid the country of the disease.

In the first three plan periods, the programme was only partially sponsered by the Centre. During this period the Leprosy Control Units (LCU) were established in areas having a prevalence rate of 10 per 1000 population and above. Each unit covers a population ranging between 2 to 4 lakhs in rural areas. Also established were Survey, Education and Treatment (SET) Centres, generally in rural areas having a prevalence rate of less than 10 per 1000. These centres integrated leprosy work with that of other health institutions, such as the Primary Health Centre (PHC), and give services to 20,000 population through a trained paramedical worker designated as a "Leprosy Technician". (51)

---

(47) GOI, Planning Commission, 1981.

(48) GOI, MOHFW, 1985, p.36.

(49) Indian Council of Medical Research, States Report on Leprosy, (New Delhi: ICMR, 1981), p.38.

(50) Government of Maharashtra, Report of the Study Team on Leprosy Maharashtra State (Bombay: Government Central Press, 1982), p.9.

(51) Ibid, p.9.

Table VI : POPULATION AT RISK, CASES ESTIMATED AND TREATED UNDER NATIONAL LEPROSY ERADICATION PROGRAMME, 1983-84.

SL. NO.	STATE/UNION TERRITORY	PREVALENCE RATE/1000	ESTIMATED NO.OF LEPROSY CASES (1981 CENSUS IN LAKHS)	CASES UNDER TREATMENT AT THE END OF MARCH 1984.
1.	Andhra Pradesh	11.72	6.28	4,90,776
2.	Assam	0.75	0.15	13,039
3.	Bihar	5.43	3.80	2,67,013
4.	Gujarat	2.93	1.00	77,302
5.	Haryana	0.07	0.01	904
6.	Himachal Pradesh	1.64	0.07	4,692
7.	Jammu & Kashmir	0.83	0.05	5,393
8.	Karnataka	5.98	2.22	1,55,702
9.	Kerala	2,95	0.75	59,103
10.	Madhya Pradesh	2.30	1.20	1,27,949
11.	Maharashtra	6.37	4.00	3,76,284
12.	Manipur	4.23	0.06	5,641
13.	Meghalaya	4.55	0.06	1,555
14.	Nagaland	6.40	0.05	2,109
15.	Orissa	12.14	3.20	2,00,194
16.	Punjab	1.19	0.20	2,657
17.	Rajasthan	0.29	0.10	11,204
18.	Sikkim	5.00	0.016	219
19.	Tamil Nadu	15.14	7.33	5,83,474
20.	Tripura	4.88	0.10	2,450
21.	Uttar Pradesh	3.79	4.20	4,12,497
22.	West Bengal	7.88	4.30	2,60,092
23.	A & N Islands	5.26	0.01	772
24.	Arunachal Pradesh	1.59	0.01	1,265
25.	Chandigarh	-	-	89
26.	D & N Haveli	1.00	0.001	204
27.	Delhi	0.16	0.01	6,376
28.	Goa, Daman & Div	4.59	0.05	2,244
29.	Lakshadweep	25.00	0.01	376
30.	Mizoram	2.04	0.01	538
31.	Pondicherry	31.66	0.19	7,984

Source : GOI, DGHS, CBHI, Health Statistics of India 1984, (New Delhi : MOHFW, 1984), pp. 180-183.

In the Fourth Plan Period the coverage was increased and the programme was made into an entirely centrally sponsored scheme. In the Fifth Plan period further new centres established were the Urban Leprosy Centres (ULC), covering an urban population of 30 to 50 thousand; Temporary Hospitalisation Wards (20 beds) attached to District or Medical College Hospitals; Reconstructive Surgery Units, providing services for the correction of deformities, attached to District/Medical Colleges; Leprosy Training Centres, etc. (52)

By October 1984, under the NLCP 398 Leprosy Control Units, 6985 SET Centres, 661 Urban Leprosy Centres (ULC), 250 Temporary Hospitalisation Wards, and 42 Voluntary SET Centres had been established, covering a total population of about 351 million in the leprosy endemic areas. Out of the estimated total number of 4.2 million cases, about 3.19 million had been detected, and of these 2.99 million were under treatment. (53)

The Government of India constituted a Working Group on the Eradication of Leprosy in 1981. The Report of the Working Group rejects the 'more-of-the-same' approach, and makes the following recommendations: (54)

1. Constitution of a National Leprosy Control Commission (NLCC) for policy guidance & surveillance of the NLCP, and National Leprosy Eradication Board responsible for implementation. Similar bodies to be constituted in the states.
2. Retention of the verticle structure of the programme and administrative and technical strengthening of the leprosy cells at the Central, State and district levels.
3. A Systematic case detection campaign and bringing of all cases under treatment in high endemic districts. Supplementing the single - drug (dapsone) therapy with a multi-drug (rifampicin, clofazimine etc.) therapy for infectious cases. Speedy implementation of the on-going Sixth Plan Leprosy Control Programme to provide the necessary infrastructure.
4. Creation of a special sub-cadre for leprosy service in the State health services to attract and retain doctors.
5. Strengthening of Voluntary Institutions and timely release of grant money. Its employees to be paid salaries on par with Government workers.
6. Implementation of the recommendations of the Mukhopadhyay Committee of the Medical Council of India regarding teaching leprosy to undergraduate medical students.
7. In view of the shortage of medical officers, posting senior paramedical workers as officers-in-charge of control units, after receiving an intensive 12-month training in basic community and general medicine.

---

(52) Ibid, pp. 9-10.

(53) GOI, MOHFW, 1985, pp. 36-37.

(54) Government of India, Report of the Working Group on The Eradication of Leprosy, (New Delhi : MOHFW, 1982), pp. 54-56.

8. Repeal of the Indian Leper's Act (1898).

9. Launching of a mass education campaign on the facts about leprosy in order to remove wrong beliefs & social stigma.

10. Priority to research efforts in vital areas, eg. methods for early diagnosis, identification of high-risk individuals, in vitro culture of the leprosy bacillus, development of newer drugs and immunomodulators, development and testing of anti-leprosy vaccine etc. Existing research institutes and facilities to be strengthened.

11. At the centre, the Director of Leprosy Control should be of the rank of Deputy Director General of Health Services, and in the states of Deputy Director of Health Services. The leprosy control staff in the districts may be placed under the direct administrative control and discipline of the State Leprosy Officer.

12. The National Leprosy Eradication Board should go into the details of the funds needed for an expanding programme.

13. Setting-up of a National Consortium to co-ordinate the activities of all voluntary organizations.

14. The Lok Sabha, Rajya Sabha & State Legislature should pass resolutions endorsing eradication of leprosy by the end of the century as a national goal.

15. Efforts should be made for India to become self-sufficent in anti-leprosy drugs.

16. Rehabilitation of leprosy victims must form an integral part of leprosy control.

17. Cash and other incentives to patients for prompt and regular drug consumption.

18. Children of leprosy patients should receive priority attention under the Integrated Child Development Services.

19. Screening of pre-school children and youth through "Skin Camps" on a regular basis.

During the Sixth Plan period, the objective of the programme was to attain a 50 per cent reduction in prevalence rate, infection rate & deformities rate. The programme was converted into a National Leprosy Eradication Programme with a total outlay of Rs. 4000 lakhs for the 1980-85 period. However the target of 90 per cent coverage of all endemic areas and detection of patients remains unfulfilled. (55) The Seventh Plan (1985-89) merely reiterates the need to consolidate the earlier gains through more effective utilisation of the infrastructure, introduction of modern technology, health education, community participation and enlisting the aid of voluntary organizations. (56)

---

(55) GOI, 1985, p.271.

(56) Ibid, p.275.

TREATMENT

Dapsone (DDS) is the drug of choice in the chemotherapy of leprosy and the NLEP has been based on dapsone monotherapy. However due to the emergence of dapsone resistant strains of M. Leprae and the problem of microbial persistence, the WHO in 1981 recommended the use of multi-drug therapeutic regimens. (57)

The NLEP continues to rely on Dapsone monotherapy due to financial constraints arising from the higher cost of the multi-drug therapy and the shortage of drugs. The short-term multi-drug therapy based on a combination of rifamipicin, clofazimine and dapsone has been introduced in a total of 15 endemic districts, and 3.2 lakh leprosy cases are covered by it. (58) As with tuberculosis chemotherapy, a major problem in the success of the leprosy programme has been drug defaulting.

3. NON-COMMUNICABLE DISEASES

A. Cardiovascular Diseases (CVD)

In the developed countries, 40 per cent of all deaths in the middle-aged population is due to cardiovascular diseases (CVD). In India, the available data suggests that mortality due to CVD is increasing; it accounted for 7.8 per cent of all deaths in 1961 and this rose to 9.8 percent in 1981. (59)

(i) Rheumatic Fever (R_F) & Rheumatic Heart Disease (RHD) are the major problems among the CVD in India, and the major cardiac problem in childhood. School Surveys undertaken by the ICMR (1982-83) report a prevalence rate of six RHD cases per 1000 population among school-going children between 5 to 15 years of age. About two million Indian Children (5-15 years) suffer from R_F and RHD (60). The causative factor is streptococcal injection for which the effective treatment is a course of 3-weekly injection of Penicillin.

Strategies for the prevention & control of RHD & RF at the community and school levels are being tested out by the ICMR. The multi-purpose health workers (MPWs) are trained to detect sore-throats, and by way of primary prophylaxis, to treat it with penicillin injection. Cases of recurrent sore throat and pain in the joints, are referred to the primary health centre (PHC). The Medical Officer (MO) is responsible for diagnosis of RE-RHD. The secondary prophylaxis is undertaken by the MPWs. School health services, school health doctors & school teachers are also being mobilised to detect & refer sore throats. (61)

---

(57) WHO, Chemotherapy of Leprosy for Control Programmes TRS Series No.675, (Geneva: WHO, 1982).

(58) GOI, MOHFW, Annual Report 1985-86, (New Delhi: MOHFW, 1986).

(59) Government of India, National Leprosy Eradication Programme, Operational guidelines on case detection, treatment, follow-up & reporting forms, (New Delhi: DGHS, MOHFW, 1985), PP.3-4.

(60) Indian Council of Medical Research, Division of Noncommunicable Diseases, Cardiovascular Diseases, (New Delhi: ICMR, 1986(a)), p.185.

(61) "A Profile of Common Diseases in India", Future, 13 winter, 1984-85, p.43.

(ii) Coronary Heart Disease (CHD), Hypertension, Stroke and Heart Failure are important emerging problems in India. In the developed countries 3/4 of all deaths due to CVD result from CHD. However there is hardly any data on the prevalence & incidence of CHD from developing countries. In India, two community based surveys on CHD provide some estimates. The prevalence rate of CHD in the Chandigarh urban population was estimated at 66 per 1000 population (30 years and above). (62) The rural community study in Haryana reported a prevalence rate of 38.4 per 1000 population (30 years and above). (63) It is estimated that 10 to 30 per cent of the Indian population aged over 40 years has hypertension. (64)

The lack of information on the magnitude of this problem in India and the role of risk factors has led to ICMR's participation in a Collaborative Study on Coronary Prone Behaviour & Coronary Heart Diseases (initiated from April 1, 1986). The prevalence & contributory risk factors need to be studied on different segments of the population which vary in their dietary habits and socio-economic backgrounds. (65)

B. CANCER

Every year some 4.5 lakhs new cancer cases (200,000 male and 250,000 female cases) are detected in India. According to the National Cancer Registry (NCR), the estimated prevalence is 1.5 million cases, with 1.7 lakhs (92,000 male & 77,000 female) deaths per year. (66) The crude cancer incidence rates for three years (1982-84) in the three cities of Bangalore, Bombay and Madras were as follows: (67)

Crude Cancer Incidence Rates (1982-84)

	Males (per 100,000)	Females (per 100,000)
BOMBAY	62.9	79.0
BANGALORE	58.8	65.2
MADRAS	57.5	81.0

Tobacco-related cancers of the oral cavity, lung & oesophagus are the main cancer problems in males. In females the cancer of uterine cervix and breast followed by tobacco-related cancers predominate. Leukemia is the main cancer problem in childhood.

---

(62) J.M. Berry & S.G. Sarvotham, Prevalence of CHD in an urban population in Northern India Circulation, 1968. Cited in ICMR, 1986, p.183.

(63) S.P. Gupta, B.D. Dewan & K.C. Malhotra, "Epidemiological Study of CHD in a rural community in Haryana-, Indian Heart Journal, 26, 1974. See Ibid,, p. 183.

(64) Future, 17 winter, 1985-86, p. 43.

(65) ICMR, 1986(a).

(66) Personal Communication (1987) from Mr. B.B. Yeole, Co-ordinating Officer, Bombay Cancer Registery.

(67) ICMR, Division of Non-communicable Diseases, Oncology, (New Delhi: ICMR, 1986(a)), pp. 2-3.

V

DRUGS AND PHARMACEUTICALS

1. Introduction 83

2. Health Issues in the Pattern of Drug Consumption and Production in India 84
   i. The drug consumption pattern in India 84
   ii. Skewed production pattern: Essential vs. non-essential, irrational and hazardous drugs 85
      - Essential drugs
      - Shortfalls in the availability of essential drugs
      - Non-essential, irrational and hazardous drugs
      - Over prescription
      - Implementing essential drugs concept : the experience of other countries

3. Development and Structure of the Pharmaceutical Industry 96
   - Production of bulk drugs and formulations : sector wise analysis
   - Dependence on imports
   - Research and development
   - Drug pricing, transfer of technology and profitability
   - Unfair practices in marketing
   - Double standards and unethical practices
   - Issue of drug information and ethical marketing
   - Issue of generic names vs. brand names
   - Quality control and drug legislation

DRUGS AND PHARMACEUTICALS

1. INTRODUCTION

The major health problems in the developing countries arise from poverty and poor environmental conditions. Almost 80 per cent of all illnesses in these countries could be prevented by better nutrition, sanitation, immunization and preventive health education. (1) It is only in a very small area that drugs are really necessary or effective. Yet, inspite of the limited role played by drugs in overall health care, their production, distribution, purchase and consumption have assumed an increasing importance in the health care systems of the developing countries.

The curative-oriented model of health care, fostering dependence on drugs and medical technologies, has proved a costly experiment. Developing countries are today faced with the paradoxical situation of a flourishing drug-market co-existing side-by-side with high morbidity & mortality rates. A considerable share of the budget allocations for health is spent on curative health care, including the purchase of drugs. In the industrialised west, national expenditure on drugs is typically in the region of 10 per cent of the national health budget; in the less developed countries, this proportion can rise to anywhere between 20 to 50 per cent. (2) According to a 1979 estimate, Bangladesh and Nepal spent 63 per cent and 44.3 per cent of their respective health outlays on drugs. The same source put India's expenditure on drugs as 18.8 per cent of the total health expenditure. (3) A more recent estimate puts the share of drugs to about 20 per cent of health sector expenditures in India. (4) Stoker & Jeffery make the following important observation:

"....It would be misleading to see the low Government budget as reflecting a low significance for drugs in official or popular conceptions of how health is maintained or regained. In practice, it is merely that drug purchasing has been privatised; Government doctors prescribe drugs which have to be purchased from the market; most private practitioners charge for the drugs they sell, not for their prescription or for their advice. ....Overall, pharmaceuticals are inextricable from health services, Government & private". (5)

This chapter presents data regarding the pattern of consumption and production of drugs in India. Since availability, prices, efficiacy and quality of drugs are influenced by the practices followed by the pharmaceutical industry, an analysis of these practices is also presented.

---

1) ISIS International, Women & Health, 3rd International Meeting, (Geneva: ISIS International, 1981).

2) R. Duncan & Weler, Profits, Politics and Drugs, (London : Macmillan, 1979).

3) V.T.H. Gunaratne, "Pharmaceuticals, Drug Policies and Health Care", First Bible Memorial Lecture, Paradima University Campus (Sri Lanka), February 1979.

4) M.E. Khan and C. Prasad, Health Financing in India : a case study of Gujarat & Maharashtra, (Baroda : Operations Research Group, 1985); R. Jeffery, "Health Policy in India: the role of the Planning Commission", Health Policy & Planning, 1,2, 1986.

5) A. Stoker & R. Jeffery, "Pharmaceuticals & Health Policy : An Indian Example", (mimeograph, 1986).

2. HEALTH ISSUES IN THE PATTERN OF DRUG CONSUMPTION AND PRODUCTION IN INDIA

The National Programmes for the control of diseases and nutrition - deficiency disorders are dependent on the easy avalability of essential drugs, therapeutics and vaccines. The Sixth Plan had stated that, "Effective measures will be taken for balancing demand & supply of essential & life-saving drugs. Vaccine production units will be strengthened to meet the requirements of the country. The pattern of production/import and distribution system would be rationalised towards the objective of promotimg primary health care & to overcome the short supply of inexpensive anti-infective drugs like Sulphonomides, anti-TB drugs, anti-leprosy drug like Dapsone etc". (6)

The technology and know-how for manufacturing these drugs is well-developed in the country. In fact the United Nations Industrial Development Organisation (UNIDO) has certified India as having one of the largest & most modern pharmaceutical industry in the developing world. It has categorised the Indian industry as technologically developed enough to be totally self-reliant (category V), and capable of producing drugs from the basic stages. (7)

Yet the coverage of drugs, & the type of products available, are not in keeping with the health needs of the people.

(i) The Drug Consumption Pattern in India.

Only 20 per cent of the Indian population is estimated to have access to modern drugs. (8) The poor purchasing power of the majority, the need to purchase drugs from commercial sources as 80% are manufactured in the private sector, the poorly developed public health services and the preference for the services of hakims, vaids and other practitioners of indigenous medicine, are some of the reasons for the low per capita consumption of drugs in India.

However, field studies in rural areas indicate that the utilisation of modern allopathic medicine is growing, due to the proliferation of private practitioners known as Registered Medical Practitioners (RMPs), and the growing demand for western medicine. (9) Indigenous practitioners are increasingly stocking & prescribing allopathic drugs. (10) As pointed out by

---

(6) GOI, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi : Planning Commission 1981), p.372.

(7) United Nations Industrial Development Organisation, Global Study of the Pharmaceutical Industry - Unido Report presented in the First Consultation Meeting on the Pharmaceutical Industry, Lisbon (Portugal), 1-5 December 1980.

(8) Indian Drug Manufacturers Association, Health in India - 2000 A.D, (Bombay : IDMA, 1982); C. Medawar, Insult or Injury : an equiry into the marketing & advertising of British food & drug products in the Third World, (London : Social Audit Ltd., 1979), p.113; All India Drug Action Network (AIDAN), A Rational Drug Policy, (New Delhi : VHAI, March 1986), p.4.

(9) D. Bannerji, "Impact of Rural Health Services on the Health Behaviour of Rural Populations in India : A Preliminary Communication" Economic & Political Weekly, Vol.8, December 22, 1973, pp.2261-68.

(10) See the chapter on Indian Systems of Medicine & Homoepathy in this volume.

Mira Shiva, "With the proliferation of health personnel (trained & untrained), chemist & druggist shops even in remote rural areas, the 'pill culture' has infiterated wide areas & communities through 'commercial channels'. (11) Any increase in per capita consumptin of drugs is useless, perhaps even hazardous, unless it is for the right drugs at the right time, at the right costs and with the right information.

(ii) Skewed Production Pattern : Essential vs Non-essential, Irrational & Hazardous Drugs.

A rational pattern of drug production & usage would be based on an assessment of the therapeutic requirments arising from the mortality & morbidity situation in the country. However the drug market does not appear to correspond to the health needs of the majority. According to the retail market survey of the Operation Research Group, (12) out of total retail sales of Rs.1,177.50 crores of formulations in 1985, the sales of the group of essential drugs were worth Rs. 625.53 crore (53.12%), and that of the non-esential drugs were worth Rs. 552.05 crore (46.88%). The share of various formulations in the retail market for drugs (1985) was as follows:

Total Retail Market - Rs. 1,177.58 crore (100%)*

	Sale (Rs.crore)	% of total market
. Systemic Antibiotics	249.02	21.15
. Vitamins, Tonics, supplements	187.78	15.95
. Cough & cold, nasal decongestants	55.40	4.70
. Anti - parastitic	46.78	3.97
. Analgesic	44.29	3.76
. Antacid	38.17	3.64
. Anti-inflammatory & anti-rheumatic	53.06	4.50
. Anti - T.B.	30.39	2.50
. Enzymes	24.61	2.10
. Sex hormones	23.61	2.00

* Note : In 1984-85, the total drug production was worth Rs. 2450 crores (See Table IX). The Sale figure of Rs. 1177.50 crores represents only the retail outlet figures for drugs. The retail market accounts for some 60-70 per cent of the sales/consumption of drugs produced in the country, and does not reflect the sizeable consumption of drugs in public hospitals & dispensaries which have been acquired on tenders.

The figures reveal that non-essential drugs such as vitamin combinations, tonics & nutrients occupy the second largest position in terms of sales, while the sales of life-saving anti-T.B. drugs are on par with those of enzymes & sex hormones.

---

(11) Mira Shiva, "The Drug Issue and the National Drug Policy : Health, Development & Policies", Social Action, Vol.35, No.3, July-September 1985.

(12) ORG data, cited in Amitava Guha, "Marketing of Medicine (Parasitology for Profit)", Paper presented at the All - India Seminar on National Drug Policy, New Delhi, 28-29 April, 1986; See also Rajya Sabha, Unstarred Question No.563, 29 July '85 : according to the Department of Chemicals & Fertilisers, the retail trade sales of formulations was Rs. 1120 crores in 1984-85.

Essential Drugs

Essential drugs (13) are those drugs selected by each country according to the health needs of its people. The use of the concept of essential drugs for selection purposes was recommended by the WHO in 1977 : (14)

> "It is clear that for the optimal use of limited financial resources the available drugs must be restricted to those proven to be therapeutically effective, to have acceptable safety & to satisfy the health needs of the population. The selected drugs are here called 'essential' drugs, indicating that they are of the utmost importance, & are basic, indispensable & necessary for the health needs of the population". "Drugs included in such a list would differ from country to country depending on many conditions, such as the pattern of prevalent diseases, the type of health personnel available, financial resources and genetic, demographic & environmental factors".

The WHO Expert Committee on Selection of Essential Drugs prepared a model list of 200 essential drugs in 1977, (15) subsequently revised & updated in 1979 (16) and 1983, (17) which would provide guidelines to member-countries in preparing their own lists.

In India essential drugs list of 116 drugs was recommended by the Hathi Committee report (18) in 1975, for meeting the majority of health needs. These were to be produced & distributed on a priority basis. However their production was never implemented and there is a severe shortage of many life-saving drugs in India.

An essential drugs list can be further graded into primary, secondary & tertiary level drugs, thereby aiding rationalization & promotion of drug consumption at all levels. Bangladesh prepared such a graded list of essential drugs which indicated 12 drugs for use at village level; an additional 33 drugs for primary health care upto local health complex level (the small regional or town hospital); and a complete list of 15 drugs for use in the regional & national hospitals. A supplementary list of 100 was established for restricted use by specialists. (19) The ICMR/ICSSR study-group identified 18 essential drugs for community level health care in keeping with the present disease pattern in India.

---

(13) This concept should not be confused with the concept of 'rational' drugs. Rational drugs are those which are accepted world-wide & included in the standard text-books of medicine & pharmacology.

(14) World Health Organization, The Selection of essential drugs, Report of a WHO Expert Committee, Technical Report Series No. 615, (Geneva : WHO, 1977).

(15) Ibid.

(16) WHO, The selection of essential drugs, Report of the WHO Select Committee, Technical Report Series No.641, (Geneva : WHO, 1979).

(17) WHO, The use of essential drugs, Technical Report Series No.685, (Geneva : WHO, 1983).

(18) Government of India, Committee on Drugs & Pharmaceuticals Industry (Hathi Committee), Report, (New Delhi : Ministry of Petroleum & Chemicals, 1975).

(19) D.J. Tiranti, Essential Drugs, The Bangladesh Example Four Years On 1982-86, (Oxford: New Internationalist Publications, 1986), p.21.

The first Drug Policy, 1978, did prepare a graded list of essential bulk drugs grouped in category I and II formulations, but only adopted certain price control measures by way of implementation. (20) Subsequently the National Drugs & Pharmaceuticals Development Council (NDPDC) dropped the concept of an 'Essential Drug List' and, instead recommended a 'Priority List' of 95 drugs. (21) The measure is not concerned with the essentiality of the drugs, but aims at minimizing the number of the drugs under price control. The proposed new Drug Policy of Government has a 'National Priority List of Bulk Drugs' containing 106 bulk drugs. (22)

Shortfalls in the availability of Essential Drugs

Many studies have pointed out the inappropriateness of the drugs produced in India for catering to the needs of the masses. (23) The two major classes of diseases prevalent in the country are infections and parasitic diseases such as dysentry - diarrhoea, malaria, cholera, etc. and respiratory diseases (general respiratory infections & tuberculosis). (24) Indian industry has the technological know-how & the licensed capacity to produce the required drugs. However either these essential, life-saving drugs are not produced at all, or in such small quantities that requirements have to be met by imports.

The plan targets for the production of different drugs are not estimated according to the epidemiological needs of the country, but are instead based on the installed capacity and previous production figures of the industry. This is partly due to the lack of adequate epidemiological data for assessing the drug requirements of the country. However, other features in planning, such as the projected demand remaining constant (see figures for Streptomycin & PAS), the scaling down of targets below the estimated demand (INH & Dapsone) and the further shortfalls in production, reflect the need to ensure the profitability of the drug industry rather than meet the requirments of the national health programmes.

Table I shows that the actual production of essential drugs is far below the estimated requirements, & that production is either decreasing or increasing at a very slow rate.

---

20) J.S. Majumdar, "The Pharmaceutical Industry in India, An Overview", Paper presented at the All-India Seminar on National Drug Policy, New Delhi, 28-29 April 1986.

21) A 'Priority drug list' is drawn up from among the essential drug list to give priority to drug production, distribution & availability for use in diseases having -
- greater mortality
- greater morbidy
- severe sequelae
- communicability (T.B., Leprosy).

and for use in national programmes such as T.B. & Malaria eradication, Blindness control, Goitre control, Immunization, etc. See AIDAN, 1986, p.33.

22) Majumdar, 1986, p.6.

23) United Nations Commission on Trade & Development, Case Studies in the Transfer of Technology - The Pharmaceutical Industry in India, (UNCTAD/TD,B/C6, 1977).

24) See the chapter on Communicable and Non-Communicable Diseases in this volume, for data on the incidence & prevalence of particular diseases in India.

Table I : PRODUCTION PATTERN OF SELECTED ESSENTIAL DRUGS

DRUGS	A/C UNIT	DEMAND PROJECTION				PLAN TARGET		ACTUAL PRODUCTION					
		83-84	84-85	85-86	86-87	85-86	86-87	80-81	81-82	82-83	83-84	84-85	85-86 -
1	2	3	4	5	6	7	8	9	10	11	12	13	14
ANTIBIOTIC													
Penicillin	MMU												
For Drug Intermediates		620	740	890	1070	890	1070					)221.68	269.11
For Formulations		390	410	430	450	430	1450					)	
STREPTOMYCIN BASE	T	270	270	270	270	270	270	227.33	255.46	239.60	238.31	235.06	188.32
ANTI-MALARIAL													
CHLOROQUINE	T	370	400	440	485	390	410	37.72	59.98	82.30	123.46	149.64	189.99
AMODIA QUINE	T	35	40	46	53	39	40	-	-	-	23.41	26.41	34.50
ANTI-TUBERCULAR													
PAS AND ITS SALTS	T	250	250	250	250	250	250	405.46	261.97	288.40	216.99	119.07	106.98
INH	T	240	290	350	415	300	325	179.76	147.70	194.57	152.50	127.70	144.34
THIACETAZONE	T	53	55	60	60	70	70	34.19	45.52	49.52	37.85	20.30	19.22
ETHAMBUTOL	T	150	180	215	260	215	260	35.06	81.11	121.91	205.25	214.06	300.72
PYRAZINAMIDE	T	(Kgs.)22000	24000	26400	29040	25	3.21	-	-	-	-	2.62	3.21
ANTI-FILARIAL													
DEC CITRATE	T	50	55	61	67	61	67	27.92	32.87	43.47	49.78	40.95	21.94
ANTI-LEPROSY													
DAPSONE (DDS)	T	81	93	107	123	60	60	22.24	25.61	30.94	29.42	7.25	11.84
CLOFAZIMINE	T	(Kgs.)780	940	1120	1120	3.0	4.0	0.20	0.44	0.63	0.94	1.47	
IMMUNOLOGICAL AGENTS													
TRIPLE VACCINE	KL	23	26	30	34	26.40	28.00					10.84	11.74
TETANUS ANTI TOXIN	MU	13000	13000	13000	13000	13000	13000					8291.02	7372.98
DIPTHERIA ANTITOXIN	MU	800	800	800	800	800	800					962.58	630.20

Source : Chemical Weekly Drugs Directory 1986, pp. 68-70; GOI, Dept. of Chemicals & Fertilisers, Annual Report 1986-87, (New Delhi : Ministry of Industry, 1987), Annexure III, pp. 43-45.

The ICSSR/ICMR Study Group's exercise on the availability of INH & dapsone showed that in 1981 only 7 per cent & 16.5 per cent of their respective total requirements was being produced. (25) The shortfall in production is in sharp contrast to the installed capacity for production. Table II shows the production pattern of the multi-national firm, Pfizer.

Table II : UNDER-PRODUCTION OF ANTI-T.B. DRUGS AND OVER-PRODUCTION OF NON-ESSENTIAL PRODUCTS - PFIZER

PRODUCT	LICENSED CAPACITY	PRODUCTION (TONNES)		
		82-83	83-84	84-85
PAS & Salts	110.00	12.60	3.67	8.52
INH	80.00	72.92	56.56	80.01
Protinex	110.00			310.25

Source : Production figures for Anti-T.B. drugs : Statement by Shri. Vasant Sathe, Minister of Industry, Lok Sabha, 24 July 1984. Cited in IDMA Bulletin, (XV), 30; for Protinex : Guha, 1986, p.4.

In India, Vitamin A defeciency has been implicated in infant mortality, in the incidence of diarrhoeal diseases & malaria, and is responsible for blinding 40,000 children annually. With 42 per cent of the population below 15 years of age, & the inability of the poor majority to purchase foods rich in Vitamin A, its production is an urgent priority. In 1985-86 however, the country was able to meet only half of its targeted requirement (a shortfall of 58.97 tonnes); between 1981-83, production of vitamin A fell below the 1980 level, and was only 1.18 tonnes above the 1980 figure in 1985-86 (Table III).

Table III : VITAMIN A PRODUCTION (TARGETS & PRODUCTION OF MONITORED BULK DRUGS).

NIT	1980-81		1981-82		1982-83		1983-84		1984-85		1985-86	
	T	P	T	P	T	P	T	P	T	P	T	P -
itamin (MMU)	66.0	59.85	66.6	52.69	77.0	52.49	90.0	60.23	105.0	60.58	120.0	61.03

T = Target; P = Production.

Source : Chemical Weekly Drugs Directory 1986, pp.60 and 68; GOI, Dept. of Chemicals & Fertilisers, 1987, Annexure II;
1980-83 Target figures : P.L. Narayana, The Indian Pharmaceutical Industry : Problem & Prospects, (New Delhi, NCAER, 1981), Table No.7, p.244.

Over 40 million Indians are afflicted with goitre, while 170 million live in goitre endemic areas. The 15 public sector and some private sector iodisation plants have a total installed capacity of 10 lakhs MT (1985-86). However the estimated production of iodised salt for 1985-86 was only 5 lakhs MT, and out of this 0.8 lakhs was the quota allotted to Nepal and Bhutan. (26)

25) ICSSR/ICMR, Health for All - An Alternative Strategy, (Pune : indian Institute of Education, 1981), p.178.

26) GOI, Annual Report 1985-86, (New Delhi: Ministry of Health & Family Planning, 1986), p.43.

Non-essential, Irrational & Hazardous Drugs

In contrast to the underutilisation of capacities for the production of essential or basic bulk drugs, there has been an overproduction of non-essential drugs, often beyond the authorised licensed capacity. (27) Out of the highest selling individual drugs in 1984, a large number were mostly non-essential or hazardous (Table IV).

Table IV : GROWTH OF HIGHEST SELLING (1984) NON-ESSENTIAL & HAZARDOUS PRODUCTS.

(Rs. crores)

RANK (1984)	DRUG	COMPANY	1979 SALES	1984 SALES	GROWTH %	PRODUCT GROUP
2.	BECOSULES	PFIZER (USA)	6.75	9.98	47.85	B complex with B 12
3.	BARALGAN	HOECHST (FRG)	3.86	6.76	75.00	Anti Spasmodic (Hazardous)
8.	DEXORANGE	FRANCHO INDIAN (FRANCE)	2.75	6.19	125.00	Blood Tonic
9.	VICKS VAPORUB	RICHARDSON (USA)	2.93	6.09	108.00	Non-Drug
10.	NOVALGIN	HOECHST (FRG)	2.32	5.31	94.00	Pain Killer banned in 15 countries
12.	BENADRYL	PARKE DAVIS (USA)	3.04	5.24	72.00	Cough Expectorant
17.	NEUROBION	E.MERCK (FGR)	2.45	4.86	98.00	B Complex
24.	PHENSEDYL	MAY & BAKER	-	3.44		Cough Expectorant
24.	HERATOGLOBIN	RAPTAKOS	-	4.28		Blood Tonic
27.	OXALGIN	CADILLA	-	4.12		Anti-Inflammatory (Hazardous)
29.	SUGANRIL	S.G. PHARMA (Ciba-Geigy, Swiss)	-	4.04		Anti- " Inflammatory (Hazardous)
31.	GLUCOSE-D	GLAXO (UK)	2.61*	3.99	52.87	Sugar only.
38	PROTINEX	PFIZER (USA) 44.	2.40*	3.26	35.83	Non-Drug
44.	DIGEPLEX	RALLIS INDIA		3.14		Digestive Enzyme Syrup

Source : Operations Research Group, Nov. 1979 & May 1984. Cited in AIDAN, 1986, p.130; * Guha, 1986, Table. I.

A. Non-essential Drugs : Tonics, Health Drinks, Vitamins & others - These are some of most highly prescribed drugs, with a rapidly growing market. In the name of correcting health problems arising from malnutrition, under-nutrition & poverty, a host of protein, vitamin & other nutritive

(27) See Rajya Sabha Unstarred Question No.2878, dt.19.12.83, and Rajya Sabha Unstarred Question No.2826, dt. 22.8.83.

supplements are being produced & promoted by the industry. Non essential drugs are drugs of unproven efficacy in relation to the purpose (indication) claimed, i.e. adequate documentation demonstrating their clinical efficacy is missing or is inadequate.

Tonics contain generous amounts of alchohol, some useless ingredients and vitamins. The vitamin dosage is either grossly inadequate, (29) or much higher than the Required Dietary Allowance (RDA) and therefore likely to be expelled in the urine. (29) (Table V)

Table V : GROWTH OF ALCOHOL - BASED TONICS & VITAMIN FORMULATIONS

(Rs. Crores)

PRODUCT	COMPANY	SALES (1979)	SALES (1984)	GROWTH %
Santivini	Sandoz	1.83	3.05	66.67
Neogadin	Raptakos	1.46	3.05	108.90
Bayer's Tonic	Bayer	1.45	2.54	74.17
Waterbury's	Warner	1.40	2.15	53.57
B.G. Phosh	Merind (MSD)	1.40	2.06	47.14
Phosphomin	Sarabhai	1.19	2.00	68.06

Source : A. Guha, "Cycle of Profit", Paper presented at Seminar on Drugging of Asia, Madras, December 6-9, 1985.

It is estimated that 15,000 tonnes of health drinks are produced annually in India (Table VI). One multi-national company, Beecham International (UK), practically monopolises this market (60 per cent market share) with its two products - Horlicks (53%) & Boost (7%0). Cadbury's Bournvita occupies 25 per cent of the market. A jar of Horlicks contains about three paise worth of vitamins, but costs Rs. 30/-. Equal

Table VI : GROWTH OF PROTEIN SUPPLEMENTING HEALTH DRINKS.

(Rs. Crores)

PRODUCT	COMPANY	SALES (1979)	SALES (1984)	GROWTH (%)
Protinex	Pfizer	2.40	3.26	35.83
Complan	Glaxo	0.85	2.19	157.64
Protinules	Alembic	1.64	1.62	1.23

Source : Guha, 1986, Annexure, Table.2.

nutrition & energy can be had for less than one-tenth the cost from adequat food itself. (30)

(28) Kamala Jayarao, "Tonics - How much an Economic Waste", Medico Friend Circle Bulleti November 1976.

(29) See Pondicherry Science Forum, 1986, for examples of Waterbury's Compund & Incremin. bottle of Waterbury's Compound costing Rs. 24/- contains only 3 mg. iron per teaspoo while an average woman needs 20.30 mg. The rest of the ingredients cost only a few pais

(30) Pondicherry Science Forum, 1986.

B. Irrational & Hazardous Drug Combinations : The Indian market is flooded with 60,000 drug formulations or combinations, many of them known to b irrational or hazardous. (31) According to accepted scientific opinion, no one drug should be combined with another drug & made into a single tablet unless the two together act better than when given separately. Except for a few recognized specific combination drugs, the large majority are scientifically & therapeutically irrational. The combination of two or more rational drugs in single compounds or fixed dose combinations merely serves to increase the cost of the product. The WHO List of 250 Essential Drugs contains only seven combinations. (32)

A major consequence of irrational drug combinations is that they divert limited and hence valuable financial and bulk-drug resources from essential drugs. A study of 47 top-selling antidiarrhoeal preparations, as listed in the CIMS, revealed that only 7 out of these 47 preparations could be scientifically justified. The rest were irrational in some way or the other, and 20 needed to be banned. (33) Merck's Neurobion (B_1, B_6, B_{12}, combination) has no scientific basis. Injectable B_{12} is only required in rare diseases, and there is hardly any disease in which the three are needed together. (34) Most cough syrups & expectorants are unscientific combinations of drugs that stimulate & suppress coughing; and anti-histamines that dry the secretions. Coughing is a protective activity and should not be suppressed; prolonged use of these products is habit forming, causes stomach upsets, reduces food intake & the chloroform in some syrups may damage the liver. In certain cough conditions a single ingredient drug formulation is recommemded. (35) The WHO essential drug list does not include cough syrups & lozenges, while Bangladesh has banned all such combinations. Tonics & Vitamins are also examples of irrational drug combinations. (36)

Several drug formulations on the market, besides being irrational & non-essential, are also hazardous to health. (37) Hazardous drugs are those with an unfavourable benefit/risk ratio, and which under any circumstances & in the presence of safer & equally effective alternative, should not be allowed to be marketed at all. Following are a few examples of such drugs:

(i) Clioquinol drugs (popular brand name Mexaform, produced by Ciba-Geigy), widely prescribed for the treatment of diarrhoeas & amoebic dysentry, are banned in U.S.A. and many developed & developing countries, including Pakistan, Nepal, Sri-lanka, Bangladesh & Malaysia. is known to cause paralysis of both legs & blindness (a condition Clioquinoltoxicicity was first reported in 1965 in Japan, & since then

---

(31) AIDAN, 1986, p.57.
while an average woman needs 20.30 mg. The rest of the ingredients cost only a few paise.

(32) WHO, TRS 722, 1985.

(33) (Dr).Shishir Modak, "Rationality Study of Anti-diarrhoeal Formulations", Medico-Friend Circle, October 1984.

(34) Pondicherry Science Forum, 1986.

(35) AIDAN, 1986, pp. 74-75.

(36) Ibid, pp. 76-77

(37) For detailed information on dangerous drugs see VHAI, Dangerous Medicines - The Facts, Banned & Bannable Drugs, Health Action Series - 2, (New Delhi : VHAI, May 1986).

called Sub Acute Myelo Optic Neuropathy or SMON). A ban of hydroxyquinoline drugs was ordered by the Drug Controller of India to be effective from November 1982, extended to March 1983. Yet in 1986 the Health Minister certified that the drug is safe. (38)

(ii) Chloramphenicol - Streptomycin combinations (common brand names are Chlorostrep, Enterostrep, Intestostrep, etc.) are propagated for diarrhoea treatment without any scientific basis. Besides being a wasteful combination, chloramphenicol carries the risk of causing a fatal blood disease (Aplastic anaemia). It is necessary for the treatment of typhoid fever, but its frequent use in unnecessary combinations can lead to drug resistance. This combination also wastes the anti-T.B. drug streptomycin which is in short supply for the treatment of T.B. The Drug Consultative Committee in 1980 recommended discontinuing the use of this combination, but it continues to be sold in India.

(iii) Highdose Estrogen Progesterone Combination Drugs (Popular brand names: Disecron Forte, EP Forte, Menstrogen, Orasecron Forte etc.) are widely misused in India for inducing abortions & for pregnancy testing. Since 1960s these are a known cause of foetal malformation and abnormalities, and have been banned or restricted in several countries including USA, Germany(FRG), Bangladesh, Singapore & Thailand. There are only a small number of conditions (as against the many indications listed by manufactures) which require hormonal therapy. However the recommended line of action is not with EP drugs. On the basis of these facts the Drug Controller of India (DCI) issued an order in 1982, banning manufacture of EP formulations (other than oral contraceptives in low doses) with effect from December 31, 1982, and sale of these drugs from June 30, 1983. The concerned manufacturers, Unicham & Nicholas, Bombay and Organon, Calcutta, obtained stay orders, so that four years later these drugs continue to be manufactured & sold. In November 1986, the Supreme Court directed the DCI to hold public hearings on the EP forte case. Four hearings have been held, one each in Madras & Delhi, Calcutta and Bombay, but the DCI's verdict is still awaited.

(iv) Anabolic Steroids (brand names : Anabolex B 12, Durabolin, Trinergic etc.) are promoted in India as growth stimulants & tonics for young children, for loss of appetite & weight, and in convalescence. These drugs have hazardous side effects like distorted sexual development, stunted height in children, liver & kidney damage etc., and are not efficacious for the indications for which they are promoted.

(v) Analgin & related drugs (brand names : Analgin, Avafortin, Baralgan, Novalgin, Oxalgin etc.) are promoted as painkillers. They can cause a fatal blood disease called agranuocytosis in which the production of white blood cells in the bone marrow is supressed. These are totally banned in Australia, Sweden, U.K. & Bangladesh and restricted in other countries. Safer alternatives include Aspirin, Ibuprofen & Indomethacin for pain & inflamation, and Paracetamol & Aspirin for pain & fever.

(vi) Butazones: Phenylbutazone, and its breakdown product in the body Oxyphenbutazone, have been promoted as anti-inflammatory & analgesic drugs (brand names : Betaflam, Buta-Proxyvon, Suganric etc). These have serious, even life-threatening side effects such as agranulocytosis, and kidney and liver damage. Since safer and equally effective alternatives are available, such as Ibuprofen, Indomethacin,

---

(38) AIDAN, 1986, pp.61-66; Pondicherry Science Forum, 1986, pp.8-9.

Asprin & Paracetamol, butazones have been banned in Argentina, Britain, Ireland, Israel & Phillipines, Bangladesh & Zimbabwe.

(vii) Fixed dose conbination of Streptomycin & Fencillin are promoted as broad spectrum antibiotics. Indiscriminate use of Streptomycin can give rise to drug resistance, thereby restricting its use in Tuberculosis. (39)

Over Prescription

In the absence of continuous medical education, the present-day doctor is utterly dependent on pharmaceutical literature for contemporary pharmacology. It has been estimated that 80 per cent of major preparations today were not known prior to the last 10-15 years. (40) Education in pharmaceuticals after graduation has primaricy been the domain of the drug manufacturers. (41) One outcome of this kind of education is the alleged unnecessary use of drugs by allopathic doctors. Empirical evidence is limited & research needs to be done in India.

One such study (42) into the prescribing practices of rural medical practitioners in India, found that while the aggressive promotion of useless & dangerous drugs by multinationals was diminishing, the subtler practice of "the inappropriate prescription of drugs which are useful (even essential) in certain circumstances but contraindicated in others" was widespread. This was found to be true for majority of the general practitioner prescriptions and over-the-counter sales of analgesics, chloramphenicol, and high dosage oestrogen-progesterone combination preparations. The most commonly prescribed class of drugs in all areas, i.e. 23 per cent of all drugs dispensed, were vitamins & mineral supplements. General Practitioners prescribed these for over half of all patients. The study points out that, "The reality is that these drugs continue to be used for trivial & bizarre indications by doctors who have no real grasp of their dangers & limitations. ..... The vast majority of rural doctors work in conditions of extreme material hardship & professional isolation. There is no peer review, no clinical feedback, no system for reporting or investigating adverse drug reactions and no access to independent information on the drugs they prescribe. Post-graduate education in clinical pharmacology is, for the rural doctor, the unchallenged province of representatives from the pharmaceutical industry. The representatives are, in general, poorly informed of the indications for their products, and often misinformed of serious side-effects".

---

(39) See(i) P. Shah, "Hazardous Drugs & Their Promotion - History & Present Status"; (ii) Anant R.S., "Irrational Drugs and Irrational Drug - Combinations". In Sen Gupta (ed), 1986; Voluntary Health Association of India, International Consultation on Rational Selection of Drugs, 17th - 21st July 1986, New Delhi.

(40) H. Kenitz, "Drug Utilization - The Role of Medical Schools", Report on Sugarposium, (Copenhagen : WHO, 1976), p.56.

(41) O. Gish & L. Feller, Planning Pharmaceuticals for Primary Health Care - The Supply & Utilization of Drugs in the Third World, International Health Programmes Monograph No.2, (American Public Health Association, 1979), p.46.

(42) T. Greenhalagh, "Drugs & the Third World", The Lancet, June 7, 1986, pp.1318-1320.

The problems of overprescribing have been strongly emphasised by the WHO. It leads to development of resistant bacterial strains by mutation which, if unchecked, could lead to epidemics comparable to the pre-antibiotics era. For example, in Mexico in 1975, 2000 patients died following an out-break of typhoid. Overuse of chloramphenicol had rendered it ineffective. (43) In India, over 100 strains of typhoid bacteria were found to be resistant to three or more antibiotics. (44)

A National Institute of Nutrition study on the drug consumption pattern in an urban locality, (45) indicted both the prescribing habits of physicians and self-medication (as high as 46.9% of all prescriptions) in the misuse of drugs. Nutritional products, particularly vitamin-mineral combinations, were the most highly prescribed/purchased products, - a practice which was not in keeping with the prevalence of disorders. Potent analgesics with hazardous ingredients such as analgin, phenylbutazone, proxyphene & cortisone, were prescribed and self-administered on a large-scale. Antibiotics were prescribed or sold over-the-counter on self-request in quantities which were inadequate, & which showed no responsibility for potency, duration of intake, or need.

Implementing Essential Drugs Concept: The Experience of Other Countries (46)

The need to limit the number of drugs in the market, & to identify and promote essential drugs was first attempted in Chile in 1971 by Dr. Salvadore Allende. In 1972 Sri Lanka reduced the number of drugs from 2100 to 600 by removing all unsafe & cost ineffective drugs from its private market. Mozambique, Afghanistan, Iran, Kenya and Norway have all taken measures to rationalize their drug policy by restricting imports, sales & prescription of useless & irrational drugs, and by giving priority to essential drugs.

In 1982 Bangladesh passed a Drug Ordinance based on WHO's concept of Essential Drug List. This policy was based on the recommendations of an eight member committee that included Dr. Zafrullah Chaudhary. The committee recommended the banning of 1707 products, and prepared a graded list of 150 essential drugs for village health worker level, PHC upto Thana Health Complex level and the tertiary level. A list of 100 supplementary drugs was prepared for restricted use in special cases. The implementation of the drug policy has raised overall production of essential drugs, helped self-reliance, reduced overseas payments for imports and increased supplies to the local market at cheaper prices. (47)

The Bangladesh experiment has proved effective, meaningful & worthwhile and can serve as a useful paradigm for a national policy on drugs in India & other developing countries.

---

(43) Voluntary Health Association of India, "Hard Sell, Bad Buy", Health for the Million, Vol III, No.2 & 3, April-June 1981, p.18.

(44) Bharat Dogra, "Drugs to kill", Probe India, April 1981.

(45) K. Krishnamurthy, B. Dinesh Kumar & G. Radhaah, "A Drug Survey -Precepts & Practice European Clinical Pharmacologist, 2-9, 1985. Re-produced in IDMA Bulletin (XVIII), January 14, 1987.

(46) Mira Shiva, "Essential Drug Concept, Need & Implementation". In A. Sen Gupta (Ed), Dr Industry and The Indian People, (New Delhi : Delhi Science Forum & Federation of Medic Representatives Associations of India, 1986), pp.60-86. See also "Drug Poli Internationally", FRCH Newsletter, Vol.3, No.3, March-April, 1987.

(47) Tiranti, 1986.

3. DEVELOPMENT AND STRUCTURE OF THE PHARMACEUTICAL INDUSTRY

Table VII shows the growth of the pharmaceutical industry in India since the First Plan period. (48)

In 1984-85, the Indian pharmaceutical industry consisted of 9000 licensed drug manufacturing units (250 large scale units and 8,750 small scale units). The total investment in the industry was estimated at Rs. 650 crore (Table VII). There are four categories of manufacturing units : (49)

1. Public sector undertakings, accounting for one third of the total investment, have two big units - Hindustan Antibiotics Limited and Indian Drugs & Pharmaceuticals Limited - and 3 small units.

2. FERA companies (i.e. the full majority foreign owned multinational firms). Their association is known as the Organisation of Pharmaceutical Producers of India (OPPI).

3. Indian organized private sector, which includes the Indian owned firms & the ex-FERA, foreign minority owned firms & subsidiaries. This sector is represented by the Indian Drug Manufacturers Association (IDMA).

4. Small-scale sector.

The domination of the Indian industry by foreign minority or majority owned firms is reflected in the fact that they control 78 percent of the total sales turnover of drugs in India. The shares of the Indian private & public sector are 16 per cent & 6 per cent respectively. (50)

Production of Bulk drugs & Formulations : Sector-wise analysis.

The production of bulk drugs involves a higher level of technology & inputs than those required for the production of formulations. A "bulk drug" is the basic, active chemical ingredient of a drug formulation. "Drug formulation" is the finished product which is directly consumed, and which contains in addition to the active drug compound, other ingredients such as dilutents, binders, flavouring/colouring agents (as in tablets), gelatin shells (capsules), chemical bases and waxes, preservatives (ointments) & so

---

(48) For an account of the development of the Industry see, Majumdar, 1986, p. 8-11; "Pharmaceutical Industry - A Growth Perspective", Commerce, (Supplement), November 12, 1977; B.V. Rangarao, Indian Drug Industry : Its Status & Perspective, New Delhi : Centre for Studies in Science Policy, Jawaharlal Nehru University, 1975).

(49) For a discussion of the oligopolistic nature of the Indian industry & its domination by foreign firms see, D. Abrol & A. Guha, "Production & Price Controls. The Achilles Heel of National Drug Policy", Paper presented at the All India Seminar on National Drug Policy, 1986. In Sen Gupta (ed). 1986), pp. 126-161.

(50) P. Shah, Article in LINK, August. 1981, Cited in VHAI, The Drug Situation in India, (New Delhi : VHAI, 1982), p.2.

Table VII : GROWTH OF THE PHARMACEUTICAL INDUSTRY IN INDIA, 1952-53 TO 1984-85.

SL.NO.	ITEM	1953-54	1984-85	% INCREASE
1.	Number of Licensed Units	1,643	9,000	447
2.	Investment (Rs. crore)	24	650('83)	2,608
3.	Bulk drug production (Rs. crore)	27 ('64-'65)	377	1,296
4.	Formulations production (Rs.crore)	35	1,837	5,148
5.	Imports (Rs, crore)	16 ('51-'52)	267.40 (in 1985-86)	
6.	Exports (Rs. crore)	0.8	111 (1982-83)	13,775

Source : Col.3 : Y.H. Gharpure, "Drugs for Masses", Eastern Pharmacist, 26 Feb.1985, pp.35-38

Production Figures (Nos. 3 and 4) : GOI, Planning Commission, Seventh Five Year Plan 1985-90, Vol.II, (N.Delhi : Planning Commission, 1985), p. 191.

Imports (No. 5) : Rajya Sabha, Unstarred Question No. 1514, 4 May '87, Lok Sabha, Unstarred Question, No. 9082, 5 May, '87.

on. (51) The national sector, comprising the public, organised private & small scale sectors, has largely contributed to the development of essential bulk drug production. On the other hand, the thrust of the MNCs, as the Hathi Committee observed, has been "towards capitalising over drug formulations & non-drug items like cosmetics & luxury goods where technology & capital inputs are much lower & which permits promotion & aggressive salesmanship and brings in much higher returns on investment." (52) (See Table VIII).

Table VIII: SECTOR-WISE VALUE OF PRODUCTION OF BULK DRUGS & FORMULATIONS.

(Rs. crores)

SECTOR	1975-76		1978-79		1984-85	
	Formul-ations	Bulk drugs	Formul-ations	Bulk drugs	Formul-ations	Bulk drugs
Public Sector	35	43	60	49		64
Foreign Sector	300	52		75		68
Indian Private)			800*	–		
Organised sector)	225*	25		NA		166
Small Scale sector)		10	190	20		79
Total	560	130	1050	200	1827*	377

* : Component break up not available.

Source : GOI, Department of Chemicals & Fertilizers, Indian Drugs Statistics 1985-86. Cited in IDMA Bulletin, (XVII), 21, 7 June 1987.

Further more, the drug MNCs have not complied with the stipulated ratio of 1:5 for bulk drugs to formulations production given in the National Drug Policy (Table IX).

Table IX : RATIO OF BULK DRUGS TO FORMULATIONS.

SECTOR	RATIO AS ON 1974-75	RATIO AS ON 1980-81	RATIO AS ON 1982-83
Foreign	1: 6	1: 12.53	1: 12
Public	1: 08	1: 1.26	1: 1.12
Indian	1: 8	1: 2.6	1: 3.44

Source : B. Ekbal, "Health for All : Need for a People's Drug Policy", 1986, Table II, p.3.

Dependence on Imports

Though import-substitution activities have been stepped up, the country continues to be dependent on imports of essential bulk drugs. As against

(51) Mukarram Bhagat, Aspects of the Drug Industry In India, (Bombay : Centre for Education & Documentation, 1982), p.57.

(52) GOI, 1975. Quoted in B. Ekbal, "Health for All : Need for a People's Drug Policy", Paper presented at the Seminar on Health for All : Concept & Reality, Foundation for Research in Community Health, Bombay, November 15-16, 1986, p.3.

total bulk production of Rs. 325 crores in 1982-83, the country imported bulk drugs & intermediates worth Rs. 163.34 crores,(53) i.e. an imports to production ratio of about 1:2. Within a period of two years since 1983-84, the imports of drugs have gone up by about 100 crores: in 1985-86, the total drug imports were worth Rs. 267.40 crores. (54) The continued dependence on foreign imports affects indigenous production of essential drugs from basic stages, & provides the MNCs with yet another avenue for control of the industry. (55)

Research & Development

The Government justifies the liberalisation of the industrial policy to enable the operation of drug MNCs in the country, on the grounds that MNCs are supplying new & advanced technology for the production of essential drugs. In reality, the drug MNCs (including the minority foreign owned firms) have contributed minimally to the production of bulk drugs, & to research & development (R&D) in drugs for treating tropical diseases. Instead, the four innovative research centres established by the foreign & private Indian Sector are involved in clinical & applied research in the area of degenerative diseases, mainly diabetes, cardiovascular illnesses & cancer. (56)

The Drug Policy, 1978 stipulates that forign companies with an annual turnover of over Rs. 5 crores, should (a) maintain R & D facilities within the country with at least 20 per cent of thir net block as its capital investment; and (b) spend four per cent of annual sales turnover as the recurring expenditure. (57)

An analysis of some 20 pharmaceutical firms in India showed, that during 1974-75 their R & D expenditure ranged between 1.5 to 2.5 per cent of their sales turnover. The parent companies in the west spend typically between 5 to 15 per cent of their annual turnover on R & D. (58) There is no instance of substantial & serious research programmes being undertaken by these firms in the less developed countries. (59)

---

(53) GOI, Ministry of Chemicals & Fertilizers, Indian Drug Statistics 1984-85. Cited in Majumdar, 1986, p.18.

(54) Rajya Sabha, Unstarred Question No. 1514, 4 May 1987; Lok Sabha, Unstarred Question No.9082, 5 May 1987.

(55) VHAI, 1982, p.1, For a discussion of the impact of import policies on bulk drug production see, S. Gautam, "Implications of Import Policy on Internmediates & Bulk Drugs Production". In Sen Gupta (ed), 1986, pp. 232-242.

(56) A. Phadke, "Multinationals in Indian Drug Industry", Medico Friend Circle Bulletin, January-February 1982; S.S. Gothoskar, Presidential Address to the 31st Conference of Indian Pharmaceutical Congress Association, Baroda, December 27, 1979; R. Tiwari, "Research on What & for Whom?", The Economics Times, 28 January 1982; A. Vaidya, Letter to Editor, Medico Friend Circle Bulletin, April 10, 1982.

(57) H.N. Bahuguna, Excerpts from the text of the Statement laid on the table of the Lok Sabha, March 29, 1978 containing Government decisions on the Hathi Committee on Drugs & Pharmaceutical Industry (New Delhi : Government of India, 1978).

(58) J.M. Rao, "A Note on Research & Development in Private Pharmaceutical Firms in India" Paper presented at the Delhi Science Forum, New Delhi, November 1981.

(59) L.H. Wortzel, Technology Transfer in the Pharmaceutical Industry, UNITAR Research Report No.14, (New York : United Nations, 1971).

The major part of all essential research is carried out in all countries by the universities & the Government, & is not paid for by multinationals. In India, the Government centres conducting drug research include The Regional Research Laboratory, Hyderabad, The Haffkine Institute, Bombay, Central Drug Research Institute, Lucknow and National Chemical Laboratory, Pune. The R & D establishments of the two large public sector units, HAL & IDPL, need to be strengthened to achieve the Hathi Committee objective of newer drugs for treating tropical diseases. (60)

The expenditure on research by drug firms is spent less on fundamental research and more on the development & clinical trials of non-essential formulations which help the company to by pass a patent, or on general market research aimed at improving sales. (61) The Indian drug industry spends more on drug promotion than on R & D for new drugs or processes. (Table X(a) & (b))

Table X(a) : COMPARISON OF EXPENDITURES ON R & D AND MARKETING BY 52 MNCs.

(Rs. Lakhs)

	EXPENDITURE HEAD	1975-76 Amount	1975-76 turnover %	1976-77 Amount	1976-77 turnover %	1978-79 Amount	1978-79 turnover %
1.	R & D	107	0.3	136	0.3	156	0.4
2.	Marketing Cost (on sales commission & advertising)	1317	3.8	1462	3.7	1534	3.6
3.	Ratio of 2:1		12		11		10

Source : Bhagat, 1982, p.45.

Table X(b) : MNCs' EXPENDITURE ON R & D AND OTHER AREAS

Outlays on R & D	Approximately 0.83% of turnover.
Outlays on Sales Promotion & Administrative Overheads	Approximately 33.0% of turnover.

Source : GOI, Ministry of Petroleum & Chemicals, Lovraj Kumar Committee, Report on MNCs, 1978. See Foreign Drug Firms Spend too little on R & D", The Hindu, 12 March 1980.

Another aspect of research by MNCs is the use of the vulnerable, poor and uneducated sections of Third World populations for clinical trials of new drugs & contraceptive technology meant for the western market. (62)

The drug MNCs have also prevented the indigenous development of technology by Indian Companies, as in the case of the Bengal Chemicals &

(60) B.S. Mahajan, "Antibiotics", Science Today, September 1981, p.19.

(61) S. Lall, "The International Pharmaceutical Industry & Less Developed Countries, with special reference to India", Oxford Bulletin of Economics & Statistics, 36, 1974, p.160; Tiwari, 1982.

(62) Haslemere Group, "Who Needs the Drug Companies, (London : War on Want, 1976), p.17.

Pharmaceuticals Works Limited. In 1959, the BCPW patented its own process of manufacturing chlorpropamide, an antidiabetes drug, and applied for a licence. In the meantime Pfizer popularised its brand of chlorpropamide (Diabehese), and one of its subsidiaries, Dumex Pvt. Ltd., sought and was granted a licence for chlorpropamide production in January 1961. Dumex Pvt. Ltd. never used the licence so that the BCPW application was kept pending since 1959 and was finally granted in December 1961. In 1962 Hoechst & Pfizer filed a suit in Calcutta High Court alleging that the BCPW's process violated a patent held by Hoechst in Germany under which Pfizer had been given a licence to manufacture the drug. The case dragged on for eight years until the court discovered that Hoechst's patent did not relate to chlorpropamide at all! Due to these legal complications, BCPW's production of the drug lagged, and it could not fulfill bulk orders. (63)

Drug Pricing, Transfer of Technology and Profitability

Overpricing has been a trend with the drug industry all over the world, for pricing has related less to the cost of development, production & promotion, than to what the market will bear. The patent system, the use of brand names in sales promotion and the doctors unfamiliarity with drug prices, all undermine genuine price competition.

Much of the overpricing is the result of transfer pricing. The latter refers to the over-pricing by a parent multinational company, of intermediate chemicals, raw materials and technology imported by its subsidiary in the developing country. This is a way of transferring funds from a subsidiary to a parent company in the form of cost of raw material & machinery rather than as profit. (64) The impact of transfer pricing can be felt in the composition of output of the multinationals and patterns of formulations as well. Since it is an important mechanism for repatriation of targeted profit, it is in the interest of the multinationals to mainly produce formulations within the host country based on the import of bulk drugs from the parent country (Table XI).

Table XI : OVERPRICING OF IMPORTS OF SELECTED BULK DRUGS

SELECTED DRUGS	PRICES AT WHICH WHICH DRUGS IMPORTED (per kg)	INTERNATIONAL PRICES (per kg)	OVERPRICING (%)
Doxycycline	5,890	1,377	340.5
Ethambutol	620	320	93.8
Frusemide	1,426	450	216.9
Gentamycin	36,670	3,500	919.1
Vitamin B_{12}	494	132	274.3
Ampicillin	1,392	743	87.3
Librium	5,555	312	1680.4

Source : N. Banerjee, Paper presented at KSSP organised Drugs Seminar, Trivandrum, November 24. Cited in Pondicherry Science Forum, 1986, Table 4.

The high costs of raw materials resulting from transfer pricing & the

(63) Pondicherry Science Forum, 1986. p. 19.

(64) C.P. Chandrasekhar & P.Purkayastha, "Transfer Pricing in the Indian Drug Industry : An estimate and its implications", Social Scientist, (104), January 1982.

47/1, (Pharmacy St. Marks Road,

consequent "mark-up", make the firms charge extremely high prices on the domestic market.

Sri Lanka s experience at rationalising its drugs industry is highly instructive. The State Pharmaceutical Corporation (SPC), a centralised bulk drug purchasing agency, was set up in 1972 to purchase pharmaceuticals for the whole country. It also formulated a list of essential drugs & abolished branding of prescription drugs. The SPC commenced operations in the second half of 1972 and imported some 52 categories of drugs through worldwide tenders. It is estimated that Sri Lanka paid 40 per cent less for these drugs in the second half of 1972 (US - $ 290, 000) as compared to the first six months of the same year (US - $ 485,000). (65)

Unfair Practices In Marketing

With about 9000 pharmaceutical units selling about 60,000 formulations, the market for drugs is highly competitive. As a result high pressure marketing techniques are employed by the industry; on the one hand this significantly adds to the cost of the drugs, and on the other, results in unethical practices and suppression of information on drugs. As demonstrated by Table XII(a), the Indian drug industry spends more on drug promotion than on research and development.

Unlike the marketing of other commodities, marketing of drugs is directed towards influencing the medical professional, who mainly decides the choice and selection for purchase of pharmaceutical products. (66) Promotional methods include advertising in medical journals, leafletting individual doctors, displaying folders & visual aids, sponsoring medical events such as conferences and seminars, and providing gifts & free samples. This starts from the day the student enters the medical college,

Double Standards and Unethical Practices

Hazardous drugs are being manufactured, imported, marketed & promoted by multinational drug firms in India & other Third World countries, even when these products are banned or heavily restricted in the parent country

---

(65) For a detailed account of Sri Lanka's experience with bulk purchasing, see Anil Agarwal, Drugs and The Third World, An Earthscan Publication, International Institute for Environment & Development, 1978, Chapter 5.

(66) For a study of unfair marketing practices in India see, J.S. Majumdar & S.K. Das, "Unfair Practices in Marketing Adopted by Multinational Drug Firms in India". In Sen Gupta (ed), 1986, pp. 176-218.

of the pharmaceutical company (Table XII).

Table XII : DRUGS PROMOTED IN INDIA, NOT MARKETED IN THE COUNTRY OF ORIGIN

DRUG	COMPANY	COUNTRY OF ORIGIN	INDICATIONS FOR WHICH THE DRUGS ARE PROMOTED
Avil Expectorant	Hoechst	FRG	Cough Expectorant
Soventol Expectorant	Boehirnger knoll	FRG	- do -
Piriton Expectorant	Glaxo	UK	- do -
Periactin	Merind (MSD)	USA	Appetite Stimulant
Ostocalcium B_{12}	Glaxo	UK	Growth Tonic
Amebiotic	Pfizer	USA	Anti Diarrhoeal
Novalgin	Hoechst	FRG	Pain Killer
Baralgan	Hoechst	FRG	Anti Spasmodic
Suganril	S.G. Chemical (CIBA Giegy)	SWISS	Anti inflamatory containing phenyl or oxphenylebutazone

Source : AIDAN, 1986, p.96.

The medical literature & promotional materials published by the drug companies, often fail to fully disclose the properties of the pharmaceutical products based on current scientific knowledge; show serious discrepancies in dosage & usages from country to country for the same drug; and, often are without any statement of side-effects, precautions and contra-indications. For instance, a study into the marketing & advertising of British food & drug products in developing countries (67) found that Ancoloxin, an anti-nausea drug manufactured by Glaxo, was being sold in India without any warning of its hazards to pregnant women. In USA, on the other hand, this drug carries statutory warnings against its prescription to "women who are or may become pregnant". This disclosure forced Glaxo to admit to its double standards. (68)

The manipulation of information involves making exaggerated claims & misrepresenting medical text-books, journals and authorities. For instance, Glaxo Laboratories cited the authority of 'Lancet' to promote its sales of Ostocalcium B-12, even though there was no such endorsement of the product in Lancet. Boehringer-knoll quoted UNICEF and used their logo to promote the use of streptomycin-chloramphenicol combination for diarrhoea treatment, whereas UNICEF actually promotes simple oral re-hydration therapy for most common diarrhoeas. (69)

Issue of Drug Information & Ethical Marketing:

Any rational drug policy must ensure that accurate and unbiased information about drugs is available to consumers and to medical practitioners. The WHO has suggested an Uniform Code of Marketing Practices

(67) Medawar, 1979.

(68) Bhagat, 1982, p.31.

(69) Guha, 1986, pp. 8-10.

throughout the World, & the 3rd International Conference on Transfer and Development of Technology in the Developing Countries under more Favourable Conditions in Pharmaceutical Industry, (Belgrade, June 1979) recommended, "monitoring & control of drug information published by the drug industry". (70)

Issue of Generic Names versus Brand names :

A drug has three names. A chemical name which gives a long description of its chemistry; a non-proprietary name or generic name; and a brand name or trade name. For instance the drug n-acethy-para-amino phenol, has the non proprietary name of paracetamol, and is sold by the brand names of crocin, calpol etc.

Brand names have two functions : (i) the initial promotion of a new drug; and (ii) the differentiation of a new drug that is made by several different firms. Brand names promotion is one of the most widely used marketing practices, and is a major cause of high drug prices. An overwhelming majority of drugs in the Indian Market are sold by their brand names. There are an estimated 40,000 brand names on the Indian market whereas most developed countries have less than 10,000 brand names. Norway has only 1900, while Britain has only 6500. (71)

The Indian Pharmaceutical Guide, 1979, lists 98 products of chloramphenical, 26 products of streptomycin, 99 of tetracycline, 48 of INH and 701 of all types of vitamins - most of them branded. The price range within those branded but similar drugs can be as great as 100 per cent or as little as 10 per cent. (72) The use of generic names will eliminate this method of profiteering in drugs (Table XIII).

Table XIII: PRICING : GENERIC VS BRAND NAMES

NAME	COMPANY	COST FOR 10 TABLETS (in Rs.)
Paracetamol	(Generic Name)	0.50
CALPOL	Well-come	2.02
CROCIN	Duphar	2.00
PANAMAX	Win-medicare	6.00
PARACIN	Stadned	2.02
PREDIMOL	Uniloids	1.66

Source : Monthly Index of Medical Specialities (MIMS), Vol.5, No.10, October 1985. Cited in Pondicherry Science Forum, 1986.

The Hathi committee recommended abolition of brand names in a phased manner. It selected 13 drugs to be sold in generic names. The committee also suggested the supply of single ingredient drugs only in generic names to government & municipal hospitals, & further recommended the introduction of all new single ingredient drugs to be under the generic names.

(70) Cited in Majumdar & Das, 1986, p. 176.

(71) Pondicherry Science Forum, 1986, p.16.

(72) A single brand may have more than one formulation; hence, there are 60,000 formulations but only 40,000 brands on the Indian market. Gunaratne, 1979.

The advantages of using generic names as part of a national drug policy are many. Generic names give full information about the class of drugs & its composition; eliminate profiteering through brand names; curb the growth of irrational combination drugs that only add to the price but have no additional benefit; allow doctors to prescribe betterand understand other prescriptions better, as well as keep in touch with new developments in pharmacy, as only generic names are used in medical & pharmacological text books, scientific medical journals and WHO publications. The doctor who has to deal with brand names is dependent on the drug companies for all information about drugs. (73)

In January 1981 the Government announced, by way of implementing the Hathi Committee report, that the brand names of five classes of drugs would be abolished as an experimental measure. These drugs were Analgin, Asprin, Chloropromozine, Ferrous sulphate & Piperazine. it also prohibited the use of brand names in newly introduced single ingredient drugs, and directed the drug firms to prominently display the generic names in the drug labels. However, this measure is opposed by the multinational drug companies on the ground that branded products ensure reliability, since products of big, international companies are subject to rigid quality control tests. (74)

Quality Control & Drug Legislation

It is estimated that 25 to 30 per cent of the drugs in India are substandard and often spurious. (75) A survey conducted in 1980 revealed that out of a total of 218 samples collected, 135 sub-standard products were manufactured by 23 multinational companies. (76)

The quality of drugs imported, manufactured, sold & distributed in the country is regulated under the provisions of the Drugs & Cosmetics Act of 1940, amended in 1955, 1960, 1962, 1964, 1972, & 1982. The provisions of this Act are enforced by the Central Drugs Standard Control Organisation which forms a part of the Directorate General of Health Services, and is headed by the Drugs Controller of India. The main functions of this organisation is to control, including ban, the import, manufacture and sale of drugs which are therapeutically irrational or hazardous, and which are prohibited in the country of origin. (77)

The Central & State Drug Control Administrations have a total strength of 600 drug inspectors, while the recommended ratio is one drug inspector for every 25 manufacturing units, and one for every 100 chemist shops. By this criterion only the states of Maharashtra, Gujarat and Kerala have an

---

(73) A. Sen Gupta, "Generic Names Versus Brand Names". In Sen Gupta (ed), 1986, pp. 170-175.

(74) Ibid.

(75) R. Rainer, "Spurious Drugs", Delhi Recorder, July 1981.

(76) UNI Economics Services Vol.III, No.3.5, January 1981. Cited in AIDAN, 1986m p.108.

(77) GOI, Annual Report 1984-85, (New Delhi : Ministry of Health & Family Welfare, 1985), p. 42.

adequate drug inspection mechanism. Uttar Pradesh with a population of 100 million people has only 24 drug inspectors. (78)

The Central Drugs Laboratory, Calcutta, is the statutory laboratory under the Act. It is responsible for preparing the National Reference Standards. The Central Indian Pharmacopoeia Laboratory carries out investigations in connection with standards for drugs included in the Indian Pharmacopoeia. (79)

---

(78) Delhi Recorder, July 1981.

(79) BOI, 1985, pp. 42-44.

VI

INDIAN SYSTEM OF MEDICINE AND HOMEOPATHY

1. Introduction 107

2. Indian System of Medicine and Homeopathy : A brief description 107
   a. Ayurveda
   b. Unani-Tibb
   c. Siddha
   d. Naturopathy
   e. Yoga
   f. Homeopathy

3. Policies Towards Indian Systems of Medicine and Homeopathy After 1947. 109
   a. Establishment of educational facilities and regulation of practice 110
      - Educational facilities
      - Manpower position
      - Growth pattern
   b. Research 116
   c. Medical care, facilities 117
   d. Primary health care and indigenous pracitioners 117
   e. Financial outlay 120

INDIAN SYSTEM OF MEDICINE AND HOMEOPATHY

1. INTRODUCTION

"Indian System of medicine" include all well developed, non-allopathic system of medicine and regimenes, namely Ayurveda, Siddha, Unani, Naturopathy (nature care), Yoga (and the Tibetan Amchi), which were evolved within the ancient civilization, of the sub-continent, or assimilated from other civilization. Homeopathy, intensively practised and officially recognized in India, originated and evolved in Germany. This chapter briefly describes these different systems, and presents data regarding their role and development in the post-Independence period. (1)

2. INDIAN SYSTEM OF MEDICINE AND HOMEOPATHY : A BRIEF DESCRIPTION

(a). Ayurveda

Ayurveda, based on the Vedas and described mainly in the Atharvaveda, is perhaps the earliest medical system. It stresses positive health through the blending of physical, mental, social, moral and spiritual welfare. Disease is viewed as a state of disharmony in the body as a whole, resulting from the interaction of both external and internal factors.

Its therapeutic approach, guided by this comprehensive view of health andill-health, encompasses dietetics, physical and mental hygiene, physical fitness and medicinal preparations from herbal, mineral and animal products. (2)

(b). Unani-Tibb

The origin of the Unani-Tibb System is traced to early Greek medicine. Its foundation was laid by Hippocreates around 450 B.C. but its present form evolved within the Arab civilization and was brought to the sub-continent by Arab Physicians. Wherever it has spread, the system has absorbed the best in local medicine.

Unani believes that the human body has the power of self-preservation and adjustment, and strives to restore the disturbance in bodily (humoral) equilibrium. (this would roughly correspond to the immunological system of modern medicine). The system therefore stresses those therapeutic methods

---

(1) Aspects of the social history of health culture development in ancient, medieval and colonial India, is not dealt with in this chapter. Useful references on this subject are Charles Leslie, "The Modernization of Asian Medical System", in J.J. Poggie and R.N. Lynch (eds) Rethinking Modernization : Anthropological Perspectives, (New York: Greenwood press, 1974); D. Banerji, "Place of the Indigenous and the Western Systems of Medicine in the Health Services of India", Paper presented at the IXth World Congress of Sociology, Uppsala 1978; R. Jeffery, "Policies Towards Indigenous Healers in Independent India", Socialist Health Review, Vol. II, No.3, December 1985, pp. 116-123.

(2) For details about Ayurveda see, P.N.V. Kurup, Bird's Eye-View on Indigenous System of Medicine in India, (Delhi: Deepak Art Press, 1977); K.N. Udupa, Promotion of "Health for All" by Ayurveda and Yoga,(Varanasi : The Tara Printing Works, 1985).

that enhance the power of the body's natural defences, so that after recovery, the patient emerges with greater powers of resistance. These methods involve herbal medicines, diet and digestion. For diagnosis Unani relies heavily on its ten methods of testing the pulse. (3)

(c). Siddha

The Siddha system, also called the Agasthya system, is restricted in practice to Tamil Nadu and a small part of Andhra Pradesh. Its literature is in Tamil, hence its relative obscurity in North India. Although leading Ayurvedists claim that Siddha is only a regional variant of Ayurveda, Siddha practitioners claim that it is distinct from, and older than, Ayurveda Siddha principally uses medicines of mineral origin. (4)

(d). Naturopathy

Naturopathy, or nature-cure, is a health-promotive way of life, rather than a system of treatment. It follows the ancient practice of the application of simple laws of nature pertaining to diet, rest, exercise and mental hygiene. It views man as a whole, and seeks the cure for disease in the realm of the spirit (through self-discipline, self-mastery and the laws of nature). There are two schools of thought regarding the approach. One believes in the ancient Indian methods, while the other adopts Western methods of physiotherapy.

Nature cure uses earth, water, air and sunlight, as for example in hydrotherapy, hip bath, mud poultice and sun baths. It is most effective as a preventive measure against the onset of disease. (5)

(e). Yoga

Yoga is an ancient philosophy and system of health science with significant provisions for the maintainance of positive health, and for the cure of certain chronic ailments, as also stress and psychosomatic conditions. The approach focusses on improving the internal environment of the individual through body and breathing exercises (asana & pranayama), restrained use of sense organs (pratyahara), concentration (dharna) and meditation (dhyana), and the attainment of super-consciousness (samadhi). (6)

(f). Homeopathy

The Homeopathy system originated in Germany, and was first absorbed into the Indian socio-cultural milieu in metropolitan Calcutta and

---

(3) Hakkim Razzack and U. Fazal, "Unani Medicine", Reader's Digest, Part I, November/December 1978; Central Council for Research in Unani Medicine (CCRUM), Research Activities in Unani System of Medicine, (New Delhi : Ministry of Health and Family Welfare, 1982); Kurup, 1977.

(4) Kurup, 1977; Central Council for Research in Ayurveda and Siddha (CCRAS), Simple Remedies of Siddha Medicine (in Tamil), (New Delhi: Ministry of Health & Family Welfare, 1979).

(5) Kurup, 1977;

(6) Ibid; K.N. Udupa, Presidential Address on the Occassion of the Asian Congress of the Indian Association for Traditional Asian Medicine, (Bombay 6-9 March, 1983); Yoga Sadhak Group, Self Improvement, (Bombay : The Yoga Institute, 1980).

neighbouring areas of Bengal in the late 18th century. It is based on the assumption that a given cluster of symptoms in a sick person can be remedied by a drug capable of producing in a healthy person the same symptoms. This is known as the principle of similia similibus; the therapeutic approach involves administration of infinitesimal doses of the drug in order to energise the vital forces of the body itself to effect the cure.

In concluding this section, mention must also be made of the rich, varied and region or locality - specific lore of folk medicine, folk psychiatry, tribal medicine and home remedies, based on local flora, fauna and belief systems, which have evolved alongside the above more formal systems. The mass of Indian people have depended on these remedies for their common ailments, yet official effort and support for research into these remedies has been lacking. There is a need to collect, translate, collate and test these remedies, and widely publicise the validated ones. (7) Another important source of indigenous health care are the traditional midwives or 'dias'. However the role of 'dias' is discussed elsewhere in this volume. (8)

3. POLICIES TOWARDS INDIAN SYSTEMS OF MEDICINE & HOMEOPATHY AFTER 1947.

The role of the indigenous systems of medicine within the overall health care system, and their development, has been the subject of deliberation by several committees both in the pre- and post-Independence periods. A revived interest in the heretige of medical practices of pre-British India, is associated with the rise of the Swadeshi movement. The National Planning Committee, established by the Indian National Congress in 1938, resolved to absorb the practitioners of Ayurveda and Unani systems into the State health organization of Independent India, by providing them scientific training where necessary. (9) However, the Bhore Committee report, (10) which became the blue-print for the development of health services system in India, was ambiguous in its assessment of the potential role of the indigenous systems. It observed that it was not in a position to assess the real value of these systems of medical treatment in the absence of investigations, and felt that these systems had little to contribute to public health, preventive medicine, obstetrics or advanced surgery. It called for the expansion of a system of medicine which was neither Eastern, nor Western, but based on scientific knowledge and practice belonging to the whole world.

However, the 1946 Health Ministers' Conference adopted the NPC proposals on the subject of indigenous systems, and resolved to make financial provisions for -

(a) research, based on the application of scientific methods, in Ayurveda & Unani;
(b) the establishment of colleges & schools for training in Diploma & Degree course in indigenous systems;

---

(7) For a report of a recent workshop on Local Health Traditions, see the Update Section of the Radical Journal of Health, Vol.1, No.1, June 1986.

(8) See Chapter on Health Organization and Manpower Development in this volume.

(9) National Planning Committee, Sub-Committee on National Health (Sokhey Committee), Report, (Bombay: Vora, 1948).

(10) Government of India, Health Survey and Development Committee (Bhore Committee), Report, (Delhi: Manager of Publications, 1946).

(c) the establishment of post-graduate course in Indian medicine for graduates in Western medicine;
(d) the absorption of vaids and hakims as doctors, health workers etc., after scientific training where necessary;
(e) the inclusion of departments and practitioners of Indian medicine on official boards and councils. (11)

The appointment of the Committee on the Indigenous Systems of Medicine, under the Chairmanship of Col. R.N. Chopra (12) to provide guidelines for the implementation of the above proposals, and for the absorption and development of practitioners, was the outcome of the conference.

The Chopra Committee's report supported synthesis of the Indian and Western systems through integrated teaching and research. The integrated curricula would be designed to strengthen and supplement the weakness in one system by the other, while research would focus on clearing Indian medicine of accretions of doubtful value and making its science/art intelligible to modern minds. The objective of research would be the synthesis of Indian and Western medicine in order to evolve a unified system of medical relief and education which was suited to Indian conditions. The drugs would be standardised. The Committee envisaged a 2 - tier integrated medical care system, which would involve indigenous practitioners with 6 months training at the primary level and institutionally qualified (in integrated medicine) persons at the secondary level. (13) (This is similiar to the Chinese approach, and gained wide acceptance with the WHO in the 70s).

In general, the post-Independence period is marked by State and Central Government patronage to the professionalization of the IndianSystems and of Homeopathy, particularly with regard to education, regulation of practice and research. However this trend has not been free of debate over policies as discussed below.

A. Establishment of Educational Facilities and Regulation of Practice

In 1954, the Dave Committee (14) was constituted by the Government to study the question of establishing standards in respect of education and regulation of practice. The Committee formulated a model syllabus for the integrated course of 5 1/2 years duration, including one year of internship. It recommended the establishment of faculties for Ayurveda in Universities, and the upgrading of existing colleges by providing indoor hospital facilities and post-graduate courses.

The response of the different states to these recommendations was varied. Some states established "Integrated" colleges which taught subjects of modern medicine and Ayurveda concurrently. In others, the "Shuddha" type

---

(11) Report of the Proceedings of the Central Provisional Health Ministers' Conference, cited in Jeffery, 1985.

(12) Government of India, Committee on the Indigenous Systems of Medicine (Chopra Committee), Report, (New Delhi: Ministry of Health, 1948).

(13) Ibid.

(14) Government of India, A Committee to Study & Report on the Question of Establishing Standards in respect of Education and Regulation of the Practice of Indigenous Systmes of Medicine (Dave Committee), Report, (New Delhi: Ministry of Health, 1956).

of institutions emphasising pure training in Ayurveda, were established. The number of integrated medical institutions increased immediately after Independence. According to one estimate, in 1958 of the 76 institutions imparting Ayurveda education, 49 were integrated and 27 were Shuddha. (15)

The support for pure training grew amongst the qualified practitioners in the 1960s, posing a major issue for policy. The latter pointed out the 'popularity' of the indigenous practitioners; the higher cost of integrated courses due to requirements of modern equipment; the tendency to spend too much time on allopathy; the availability of indigenous graduates for rural practice; and the inherent incompatibility of the two systems rendering integration impossible. The supporters of 'integrated' training however argued that science was universal; that the low cost argument would promote unscientific practice in rural areas and harm research and development; and that indigenous practitioners actually used western drugs and treatment. The supporters of 'pure' training had gained Government support by the early seventies. (16)

Educational Facilities

The Central Council of Indian Medicine (CCIM) established in 1971 and the Central Council of Homeopathy (CCH) established in 1974, regulate educational standards and professional practice among indigenous and homeopathy practitioners. The Council have formulated a standard syllabus for the under-graduate (and post-graduate in the case of the Indian Systems) course, and are responsible for maintaining uniform standards of education. State boards are also functioning in all states for the regulation of practice in Indian medicine. (17)

There are (1982 estimates) 98 undergraduate colleges for Ayurvedic education with an admission capacity of over 3,751 seats; 17 colleges for Unani education with 595 seats; 1 college for Siddha education with 75 seats; and 123 colleges for Homeopathic education with over 8,387 seats (Table I).

There is a wide variation in the statewise distribution of these educational facilities. Some 66 per cent of all Ayurvedic colleges are concentrated in just six states (Maharashtra, Bihar, Gujarat, Uttar Pradesh, Karnataka and Madhya Pradesh), while Maharashtra alone accounts for some 20 per cent. In the case of Homeopathic education, the 5 states of Bihar, Maharashtra, Uttar Pradesh, Madhya Pradesh and West Bengal together account for 89 colleges (72%) admitting over 6,326 students (Table I). Voluntary support for Ayurvedic education and colleges is largest in Maharashtra, Bihar, Harayana, Tamil Nadu, Punjab and Delhi; Government supported colleges predominate in Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, West Bengal, Assam and

---

(15) Kurup, 1977, p.30.

(16) Jeffery, 1985, p. 122. See for a discussion of the 'low cost' argument, G.A.A. Britto, Indian Systems of Medicine & Homeopathy, (Bombay: The Foundation for Research in Community Health, August 1984).

(17) Government of India, Annual Report 1984-85, (New Delhi : Ministry of Health & Family Welfare, 1985).

Table I : NUMBER OF COLLEGES OF INDIAN SYSTEMS OF MEDICINE AND HEMEOPATHY AND THEIR ADMISSION CAPACITY - 1.4.82.

SR.	STATES/UTs	AURVEDA		UNANI		SIDDHA		HOMEOPATHY	
		No. OF COLLEGES	ADMISSION CAPACITY	NO. OF COLLEGES	ADMISSION CAPACITY	NO. OF COLLEGES	ADMISSION CAPACITY	NO. OF COLLEGES	ADMISSION CAPACITY
1.	Andhra Pradesh	4	130	2	80	-	-	4	155
2.	Assam	1	25	-	-	-	-	4	160
3.	Bihar	12	475	1	40	-	-	26	3,105
4	Gujarat	9	258	-	-	-	-	4	250
5.	Haryana	4	200	-	-	-	-	-	-
6.	Himachal pradesh	1	50	-	-	-	-	-	-
7.	Jammu & Kashmir	-	-	-	-	-	-	-	-
8.	Karnataka	8	195	1	15	-	-	8	650
9.	Kerala	5	140*	-	-	-	-	5	300
10.	Madhya Pradesh	7	167	1	25	-	-	15	470
11.	Maharashtra	18	845	2	60	-	-	24	1,220
12.	Orissa	3	90	-	-	-	-	4	175
13.	Punjab	3	130	-	-	-	-	2	100
14.	Rajasthan	5	300	3	130	-	-	4	140
15.	Tamil Nadu	2	40	1	15	1	75	1	21
16.	Uttar Pradesh	10	430	4	180	-	-	10	295
17.	West Bengal	2	120	-	-	-	-	10	1,236
18.	Chandigarh	1	40	-	-	-	-	1	50
19.	Delhi	3	110	2	50	-	-	1	60
	India	98	3,751	17	595	1	75	123	8,387(a)

* One college in Kerala is awaiting sanction from Government for restarting. Hence admission capacity not included.

(a) Three colleges in Bihar, 2 in M.P. & 1 in Rajasthan have not reported admission.

Source: GOI, DGHS, CBHI, Health Statistics of India 1984, (N. Delhi : MOHFW, 1984)

imachal Pradesh (1980 estimates). (18)

The post-graduate admission capacity for Ayurveda is 225 seats, spread ver various college departments, and those of the National Institute of yurveda, Jaipur (60 seats), Gujarat Ayurvedic University, Jamnager (30 eats), and Benaras Hindu University (20 seats). There are 20 seats for ost-graduate education in Siddha in two departments in Tamil Nadu, and 27 eats for post-graduate Unani studies in departments at Hyderabad and ligarh. There is no post-graduate course in Homeopathy at present. (19) ll post-graduate institutions and departments are wholly financed by the entral Government. Four autonomous national level institutes, namely the ational Institute of Ayurveda, Jaipur, the National Institute of omeopathy, Calcutta, the National Institute of Unani, Bangalore and the ational Institute of Naturopathy, Pune are responsible for evolving & emonstrating high standards of teaching, training and research. (20)

Manpower Position

Table II gives the 1983 estimates of the number of practitioners of the Indian Systems of Medicine & Homeopathy in India, registered with the State Boards of Indian Medicine & of Homeopathy.

Table II : NUMBER OF REGISTERED PRACTITIONERS OF INDIA SYSTEMS OF MEDICINE AND HOMEOPATHY, AS ON 1.1.83.

ISM + H CATEGORY	NO. OF PRACTITIONERS	POPULATION (1981 CENSUS)* PER PRACTITIONER (CRUDE COMPUTATION)*
Ayurveda	232,190	1:2, 951 population
Unani	27,736	1:24,704
Siddha	11,476	1:59,706
Naturopathy	106	-
Homeopathy	115,710	1:5, 922
All systems	387,218	1:1, 770

* 6,85,185,000 (1981 Census)

* A more accurate computation would adjust these figures against those who would die, those who renounce practice and those not in active life, which would be around 5% of the total number of practitioners.

Source: GOI, DGHS, CBHI, Health Statistics of India 1985, (New Delhi: MOHFW, 1985), Table 15.2.

The registered practitioners belong to two categories, namely those who have acquired a degree/diploma from a University/Board, and those who have obtained diploma after taking correspondence courses and examinations, but have not undergone formal training. However, the registeration figure

(18) See Government of India, Directorate General of Health Services, Central Bureau of Health Investigation, Pocket book of Health Statistic of India 1980, (New Delhi : Ministry of Health & Family Welfare, 1981), pp. 44-45.

(19) GOI, MOHFW, 1985.

(20) GOI, MOHFW, 1985.

exclude a third category of practitioners (mainly of the Indian systems) whose numbers are estimated to equal those of the qualified and registered. The latter mainly practice in the rural areas and have gained experience as apprentices working with traditional physicians. (21) A second major controversial issue in the policy field has been regarding the registration or banning of unqualified practitioners. The establishment of the Central Council standardised registeration; the procedure however appears to vary from state to state. (22)

Growth Pattern

At present there is one ISM + H practitioner per 1770 population (Table II). In rank order Ayurvedists top the list, with an average ratio of 1. Ayurvedists per 2951 population.

Table III indicates the overall growth in the number of Ayurvedic, Unani + Homeopathic practitioners between 1969-1981. In this period, the overall growth rate was 6,135 practitioners per annum. However the quantum of growth varies from system to system. The number of Ayurvedic practitioners rose by 76, 419 in 1969-81 period, or by 6,368 practitioners per annum. However, Unani registered a negative growth, and its number declined by 1,774 practitioners in the same twelve year period. Homeopathy similarly recorded a drop of 1,201 practitioners in this same period.

Table III : SYSTEMWISE NUMBER OF PRACTITIONERS OF INDIAN SYSTEM OF MEDICINE & HOMEOPATHY IN SELECTED YEARS (1969-1981).

SYSTEM	1969	1974	1977	1978	1981
(1)	(2)	(3)	(4)	(5)	(6)
Ayurveda	1,55,828	1,68,997	2,23,109	2,25,063	2,32,247
Unani	24,530	16,506	30,400	30,454	22,756
Homeopathy	1,10,514	1,41,785	1,45,434	1,46,446	1,09,493
TOTAL FOR 3 SYSTEMS	2,90,872	3,27,288	3,98,943	4,01,963	3,64,496

* Siddha figures are available only for 1981, hence not included here.

Source: Columns (2) & (3) : GOI, DGHS, CBHI, Health Statistics of India 1971-75, (New Delhi : MOHFW, 1976).
Column (4) : GOI, DGHS, CBHI, Pocket Book of Health Statistics of India 1977, (New Delhi : MOHFW, 1978).
Column (5) : GOI, DGHS, CBHI, Pocket Book of Health Statistics of India 1979, (New Delhi : MOHFW, 1980).
Column (6) : GOI, DGHS, CBHI, Health Statistics of India, 1982, (New Delhi : MOHFW, 1983).

In general, a definite decline in the number of these professionals is discernible. Even Ayurveda, the most widespread of the Indian systems, has declined or not kept pace with population growth in several states. Table IV highlights the regional growth patterns with respect to Ayurveda through a comparison of 1958 and 1981 data.

(21) Kurup, 1977, p.25; World Health Organization Traditional Medicine Programme, Report on a Seminar, Colombo, 1-5 April 1977 (mimeograph), p.3.

(22) Jeffery, 1985, p.121.

Table IV : STATEWISE APPROXIMATE POPULATION PER AYURVED PRACTITIONER A COMPARISION.1958 AND 1981.

STATES & YEARS		No. OF AYURVEDISTS	AVERAGE POPULATION SERVED BY ONE VAID
Andhra Pradesh	1958	1,365	10,911
	1981	14,202	3,773
Assam	1958	881	10,265
	1981	558	35,668
Bihar	1958	14,311	2,710
	1981	31,056	2,248
Bombay*	1958	13,455	3,587
Maharashtra	1981	26,329	2.382
Jammu & Kashmir	1958	600	7,350
	1981	256	23,258
Mysore	1958	3,000	6,258
Karnataka	1981	8,415	4,402
Kerala	1958	10,159	1,334
	1981	11,038	2,301
Madhya Pradesh	1958	5,855	4,453
	1981	16,764	3,110
Madras	1958	9,066	3,306
Tamil Nadu	1981	7,145	4,760
Orissa	1958	900	8,136
	1981	2,250	11,676
Punjab*	1958	25,043	644
	1981	17,238	967
Rajasthan	1958	9,148	1,845
	1981	15,899	2,145
Uttar Pradesh	1958	32,137	1,967
	1981	41,030	2,703
West Bengal	1958	14,287	1,779
	1981	4,691	32.220
Delhi	1958	1,858	1,362
	1981	2,871	2,158
Himachal Pradesh	1958**	300	2,774
Manipur	1958**	200	2,888
Tripura	1958**	226	2,828

* Reorganised subsequently, hence data not comparable.

** There were no Ayurvedists reported in these places in 1981.

Source : For 1958: Government of India, Committee to study the Status of Ayurveda in India (Udupa Committee), Report, (New Delhi : Ministry of Health, 1958).

For 1981: GOI, DGHS, CBHI, 1983.

It would appear that qualified Ayurvedists have almost ceased to practice in Himachal pradesh, Manipur & Tripura. In Assam, West Bengal and Jammu & Kashmir the number of practitioners have declined, while Tamil Nadu, Orissa, Rajasthan, Uttar Pradesh, & Delhi have recorded lower growth rates vis-a-vis population growth.

A number of reasons can be suggested to explain the drop in the growth rate of ISM & H practitioners, but these need further research.

(1) From 1975 onwards, the registration of practitioners who had not undergone a regular college course of post-matric five years was stopped as a result of regulation.
(2) Certain technical modalities such as the requirement to register at the time of the IMCC election in 1983, may have helped to remove from the list those hereditary practitioners registered 'for life'.
(3) A high drop-out rate from practice, as most of the experienced practitioners are above 50 years of age.
(4) Several colleges have either stopped new admissions, reduced the number of seats, or have themselves closed down due to lack of prescribed minimum amenities.
(5) Natural death and old age.
(6) Graduates may be indifferent to registration. Hence, though in reality a larger number is entering practice, this is not reflected in the official records.
(7) Inaccurate or poor reporting and coverage of data by the CBHI.

B Research

The Central Council for Research in Indian Medicine and Homeopathy (CCRIMH) was established in 1969. Through its five scientific Advisory Boards, one each for Ayuryeda, Siddha, Unani Homeopathy, and Yoga-Naturopathy, the Central Council guided & supervised research activities in a number of institutions. It was dissolved in January 1979, and four central councils on the lines of the Indian Council of Medical Research (ICMR) were constituted. These are the Central Council for Research in Ayurveda and Siddha (CCRAS), the Central Council for Research in Unani medicine (CCRUM), the Central Council for Research in Homeopathy (CCRH), the Central Council for Research in Yoga and naturopathy (CCRYN). These four apex bodies, wholly centrally financed, aid, guide, develop and co-ordinate scientific research through a number of Central & Regional Research Institutes, Regional Research Centres, Clinical and Drug Research Units etc.

The research activities include drug research, clinical research, health care or medicare research, literary research and research on indigenous contraceptive drugs. (23)

The Pharmacopoeial Laboratory for Indian Medicine and the Homeopathy Pharmacopoeia Laboratory, both offices of the Ministry of Health & Family Welfare, are national level laboratories entrusted with the responsibility of laying down standards regarding single drugs and compoundformulations, and drug testing procedure. (24) The former has a museum of medicinal plants which can facilitate the identification of herbs.

---

(23) GOI, MOHFW, 1985.

(24) Ibid.

The public sector undertaking Indian Medicines Pharmaceutical Corporation Ltd. (IMPCL), a number of multi-nationals and several small scale units produce the drugs. Almost all state Governments have established pharmacies to supply drugs to the state s dispensaries and hospitals. The primary source of raw materials for drugs have been natural resources, particularly forests, and to a smaller degree herbal farms. (25) The drug control of these systems are being enforced by the State Government under the Drugs and Cosmetics Act.

The top priority in research has been given to the preparation and standardisation of drugs. The Sixth Plan emphasised the need for co-ordinated research efforts for providing drugs for communicable diseases such as Malaria, TB etc., as also Cancer, Diabities, etc., and for developing effective methods of contraception. (26)

C Medical Care Facilities

Medical care services under Indian System of Medicine and Homeopathy are provided by various hospitals and dispensaries functioning in the States (Table V). In addition the Government has established an Ayurveda hospital, and Ayurveda, Siddha, Unani dispensaries under the Central Government Health Scheme (GHS). There are a number of Ayurvedic Dispensaries under the Labour Ministry & the Coal Development Authority.

D. Primary Health Care and Indigenous Practitioners.

As mentioned earlier in this section, soon after Independence, policy recommendations favoured the incorporation of indigenous practitioners into the national health services and the dev elopment of an integrated medical care system. However, this was never implemented, and the training of auxiliary medical personnel for the extension of rural medical care was preferred.

In the early 1970s international concern was voiced in the World Health Assembly debates, that the existing health services in developing countries were not meeting the requirement of the majority. The two important developments for the promotion of national health services were the adoption of the primary health care approach, and the setting of the main social target for Governments, of Health for all by 2000 A.D. (27) The search for new programmes and strategies focussed on developing community participation through a variety of locally acceptable people like practitioners of traditional medicine. The joint UNICEF/WHO study (28) that recommended the monilisation and training of indigenous practitioners (including traditional birth attendants), partly drew its inspiration from the Chinese experiment of harnessing the legacy of health culture to the needs of its vast rural population, and combining it with western medicine.

---

(25) C.R. Bijoy, "Health : Emerging Trends and Indian Reality", Paper presented at the Third Annual Conference on Manpower Resources for 2000 AD, Sept. 10-12, 1982 (Goa).

(26) Government of India, Planning Commission, Sixth Five Year Plan 1980-1985, (New Delhi: Planning Commission, 1981), p.372.

(27) World Health Organization, The Work of WHO 1976-1977, Biennial Report of the Director-General to the World Health Assembly and to the United Nations, (Geneva : WHO, 1978).

(28) V. DjuKanovich and E.P. Mach (eds), Alternative Approaches to Meeting Basic Health Needs in Developing Countries, A Joint UNICEF/WHO study, (Geneva : WHO 1975).

Table V : MEDICAL CARE FACILITIES UNDER INDIAN SYSTEMS OF MEDICINE & HOMEOPATHY BY MANAGEMENT STATUS AS ON 1.4.1984.

SR.	MANAGEMENT STATUS	NUMBER OF HOSPITALS & DISPENSARIES											
		AYURVEDA		UNANI		SIDDHA		NATURE CURE		YOGA		HOMEOPATHY	
		HOSPI-TALS.	DISPEN-SARIES.	HOSPI-TALS.	DISPEN-SARIES.	HOSPI-TALS.	DISPEN-SARIES	HOSPI-TALS.	DISPEN-SARIES.	HOSPI-TALS.	DISPEN-SARIES.	HOSPI-TALS.	DISPEN-SARIES.
	State Government												
1.	UT Admn.	257	8335	18	697	105	430	5	4	6	4	44	1419
2.	Local Bodies	2	2657	-	319	-	-	-	-	-	-	2	526
3.	Others (aided by State Govt. or Local Bodies)	48	1052	10	22	-	-	27	29	-	-	72	113
	Central Government												
4.	Health Scheme	1	27	-	4	-	1	-	-	-	-	-	26
5.	Railway Ministry	-	-	-	-	-	-	-	-	-	-	-	58
6.	Labour Ministry	-	-	-	-	-	-	-	-	-	-	-	-
	i) Employees State Insurance	-	67	-	-	-	-	-	-	-	-	-	-
	ii) Mica Mines	-	14	-	-	-	-	-	-	-	-	-	-
	iii) dolomite Mines	-	12	-	-	-	-	-	-	-	-	-	-
7.	Energy:												
	i) Coal Mines	-	30	-	-	-	-	-	-	-	-	-	-
	Total	308	12,214	28	1,042	105	431	42	33	6	4	118	2,142
	No. of Beds	10,879	-	1,101	-	885	-	470	-	60	-	3,716	-

Source : GOI, DGHS, CBHI, 1984, Table 15.3.

At the national level too, the 1970s witnessed a resurgence of discussions related to the incorporation of indigenous practitioners for the speedy delivery of medical services to the rural areas. The launching of the Community Health Worker Scheme in 1977 was an attempt to involve rural, institutionally non-qualified, traditional practitioners is voluntary, paramedical community workers.

The ICSSR/ICMR Joint Study Group (29) recommended the development of a national system of medicine through the 'Synthesis' (and not 'integration') of the different systems. Subsequently the National Health Policy was formulated, which assigned an important role to Indian Systmes & Homeopathy in the delivery of primary health care, particularly for preventive and promotive aspects. This is based on the assumption that there exist a large number of practitioners in urban/rural areas; that the cost of treatment is lower than allopathy; that practitioners enjoy high local acceptance and respect and therefore exert considerable influence on weal health beliefs and practices. (30)

However, studies have shown the declining utilization of indigenous remedies by the rural population, and the growing preference for injections, antibiotics and other allopathic medicines. This has resulted in the growth of large numbers of Registered Medical Practitioners (RMPs) at the expense of large numbers of Registered Medical Practitioners (RMPs) at the expense of Vaids and Hakims; and has resulted in the latter's adoption of allopathic drugs. This trend is attributable to the neglect of, and poor investment in, the Indigenous Systems, both before and after Independence. (31) The same author also points out the growing popularity of these systems amongst the urban, educated sections, due to the fewer side-effects.

The following steps have been set out in the Sixth Plan (32) for the development of these system. These are also reiterated in the Seventh Plan. (33)

1) Prevention of growth of sub-standard educational institutions.
2) Adequate financial support to existing recognised institutions for improvement in quality of teaching and research.
3) Introduction of modern & scientific methods of investigation & equipping students with adequate knowledge of subjects like physiology, pathology, anatomy, etc.
4) Developing curative facilities under these systems through more hospitals/dispensaries, etc.
5) Co-ordinating all research efforts to ensure purposive and fruitful research.
6) Standardisation of the pharmacopoeia and manufacture of high quality drugs.

---

(29) Indian Council of Social Science Research/Indian Council of Medical Research, Health fo All - An Alternative Strategy, (Pune : Indian Institute of Education 1980).

(30) GOI, MOHFW, 1985).

(31) Banerji, 1978.

(32) Government of India, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi: Planning Commission, 1981). p.370.

(33) Government of India Planning Commission, Seventh Five Year Plan 1985-90, (New Delhi : Planning Commission, 1985). p.278.

E. Financial Outlay.

Government patronage in terms of the total financial allocation for the development of Indian Systems of Medicine and Homeopathy has steadily grown over the seven five year plans. The total outlay of 43.25 crores (40 crores for Central programmes and 3.25 crores for Centrally Sponsored Programmes) in the Seventh Plan represents a substantial increase over the Sixth Plan outlay. However, the ISM & H outlay has always remained under five per cent of the total health outlay, and this proportion has declined considerably from the Fifth Plan onwards (Table VI).

Table VI : OUTLAY ON INDIAN SYSTEMS OF MEDICINE & HOMEOPATHY IN THE PLANS.

(Rs. crores)

PLAN	HEALTH OUTLAY	INDIAN SYSTEMS & HOMEOPATHY	PROPORTION OF OUTLAY ON ISM & H TO TOTAL OUTLAY ON HEALTH (PER CENT)
(1)	(2)	(3)	(4)
First Plan (1951-56)	65.3	0.40	0.61
Second Plan (1956-61)	140.8	4.00	2.84
Third Plan (1961-66)	225.9	9.80	4.34
Fourth Plan (1969-74)	335.5	15.83	4.72
Fifth Plan (1974-79)	760.8	27.72	3.64
Sixth Plan (1980-85)	1821.1	29.00	1.60
Seventh Plan (1985-90)	3392.9	43.25	1.27

Sources : Col. (2), & Sixth Plan outlays : GOI, DGHS, CBHI, 1984, Table 4.1,
Col. (3) (First to Fifth Plan): GOI, DGHS, CBHI, Pocketbook of Health statistics of India 1976; (New Delhi : MOHFW, 1976), Table 15;
Seventh Plan outlays : GOI, Planning Commission, 1985, Annexure 11.1.

The above Table only provides data on the Central expenditure. Apart from this each state also makes financial provision for ISM & H, but this varies greatly from state to state.

VII

POPULATION, HEALTH AND DEVELOPMENT

1. Population in India 121
   - Trends in mortality and fertility indices
   - Age structure and fertility

2. Population Policy and Family Planning in India 129
   - Plan Period : 1951-86
   - Organisation of the family planning programme
   - Clinic approach
   - Extension approach
   - Camp approach
   - The national population policy(1976)
   - Integrated approach
   - family planning methods
   - Pattern of financial allocations
   - International assistance
   - Sixth five year plan
   - New population control approaches

3. Population, Health and Development 142

POPULATION, HEALTH AND DEVELOPMENT

1. POPULATION IN INDIA

The 1981 census placed the current population of India at 685 million. It is second only to China's 971 million.(1) Table I demonstrates the pattern of population growth in India in the 20th Century, based on census calculation. Till 1921 the growth pattern fluctuates; over a long period population had grown slowly due to high mortality from famines and epidemics. After 1921 the population registered a steady increase. The death rate decreased from a high 47 per thousand in the decade 1911-21, to 31 per 1000 in 1931-41, while expectation of life at birth increased from 20 years to 31.8 years in the same period. This decline has been attributed to plague eradication, control of other communicable diseases like malaria, famine relief, preventive and other public-health measures and the advancements in medical science. (2) During 1961-71 the death-rate in India was 19 per 1000 population, so that over a course of 50 years (1921-71) there had been a decline of 59.7 per cent in mortality rates. However the birth rate did not register a compensatory trend, declining by only 14.34 per cent in the same period. It decreased from 48 per 1000 in 1911 to 45/1000 in 1931-40, and stood at 41/1000 in 1961-71. It is obvious that if the rate of population growth is to be checked, it is the birth rate which needs to be reduced.

Trends in Mortality and Fertility Indices

Decadal variation in percentage decline of birth and death rates since 1921 reveals an interesting trend, especially in the case of fertility (crude birth rate).

Mortality has declined at a consistent pace averaging 17.5 per cent per decade between 1921-81 (Table I), thus indicating the impact of various health programmes, at least on the survival of the population that has crossed 5 years of age. However infant and childhood mortality (as also maternal mortality) remains very high, and are crucial in determining the trend of fertility. Infant Mortality Rate (IMR), which was 160 per 1000 live-births in 1947, was estimated at 126 per 1000 in 1978. In 1980, deaths of children under 5 years of age continued to account for nearly 46% of all deaths. (3)

The overall death rate stands at 12 per 1000 population (1983), but it shows wide variations between different states, and between urban and rural population. Rural Uttar Pradesh with a death rate of almost 17 per 1000, rural Madhya Pradesh with almost 16 per 1000 and rural Rajasthan with 14.4, contrast sharply with the death rate of 6.7 per 1000 in rural Kerala (Table II).

---

(1) Beijing Review, 1981, p.13.

(2) A.A. Bhende and T. Kanitkar, Principles of Population Studies, (Bombay : Himalaya Publishing House, 1978), pp. 95-96.

(3) See the chapter on Health of Women & Children in this volume for a discussion of infant & child mortality, & maternal mortality.

Table I : TRENDS IN POPULATION IN INDIA : 1901-1981

YEAR	PERSONS (FIGURES IN THOUSANDS)	MALES	FEMALES	SEX RATIO F/1000 M	DENSITY OF POPULATION. p.sq.kms.	% OF DECADAL VARIATION	% OF URBAN TO TOTAL POPULATION	CRUDE BIRTH RATE (RATE PER 1000 POPULATION PER ANNUM)	CRUDE DEATH RATE (RATE PER 1000 POPULATION PER ANNUM)	NATURAL GROWTH RATE (RATE PER 1000 POPULATION PER ANNUM)
1901	2,38,396	1,20,791	1,17,359	972+	77	-	10.84	-	-	-
1911	2,52,093	1,28,385	1,23,708	964	82	5.75	10.29	49.2	42.6	6.6
1921	2,51,321	1,28,546	1,22,775	955	81	(-) 0.31	11.18	48.1(-2.2)	47.2(+10.8)	0.9
1931	2,78,977	1,42,930	1,35,789	950+	90	11.00	11.99	46.4(-3.5)	36.3(-23.1)	10.1
1941	3,18,661	1,63,685	1,54,690	945+	103	14.22	13.86	45.2(-2.6)	31.2(-14.0)	14.0
1951	3,61,988	1,85,528	1,75,560	946	117	13.31	17.29	39.9(-11.7)	27.4(-12.2)	12.5
1961	4,39,235	2,26,293	2,12,942	941	142	21.51	17.97	41.7(+4.5)	22.8(-16.8)	18.9
								R U C	R U C	
1971	5,48,160	2,84,049	2,64,111	930	177	24.80	19.91	38.9 30.1 36.9	16.4 9.7 14.9	R U C
1972								38.4 30.5 36.6	18.9 10.3 16.9	
1973								35.9 28.9 34.6	17.0 9.6 15.5	
1974								35.9 28.4 34.5	15.9 9.2 14.5	
1975								36.7 28.5 35.2	17.3 10.2 15.9	22.3
1976								35.8 28.4 34.4	16.3 9.5 15.0	
1977								34.3 28.8 33.0	16.0 9.4 14.7	
1978								34.7 27.8 33.3	15.3 9.4 14.2	
1979								35.1 27.6 33.7	14.1 8.1 13.0	
1980								35.1 27.8 33.7	13.7 7.9 12.7	
1981	6,85,185*	3,54,398*	3,30,787*	933*	216*	25.00*	23.31*	36.6 27.0 33.9	13.7 7.8 12.5	
1982								35.5 27.6 33.8	13.1 7.4 11.9	
1983								35.3 28.0 33.6	13.0 7.7 11.9	

+ : Excludes Pondicherry. The distribution of population by sex of Pondicherry for 1901 (246354), 1931 (258628) & 1941 (285011) is not available.

: Rural/Urban break-up prior to 1971 not available.
R---rural, U---urban, C---combined.
The aggregated estimates for (1971-78) India exclude Bihar + W.B.

* : Including projected population of Assam Figures in parentheses indicate % change over previous decade.

Source: GOI, DGHS, CBHI, Health Statistics of India 1985, (New Delhi : MOHFW, 1985), Table 1.1, p.8 and Table 2.1 (Cols.1-8), pp. 34-35.

Table IV : STATEWISE APPROXIMATE POPULATION PER AYURVED PRACTITIONER A COMPARISION.1958 AND 1981.

STATES & YEARS		No. OF AYURVEDISTS	AVERAGE POPULATION SERVED BY ONE VAID
Andhra Pradesh	1958	1,365	10,911
	1981	14,202	3,773
Assam	1958	881	10,265
	1981	558	35,668
Bihar	1958	14,311	2,710
	1981	31,056	2,248
Bombay*	1958	13,455	3,587
Maharashtra	1981	26,329	2.382
Jammu & Kashmir	1958	600	7,350
	1981	256	23,258
Mysore	1958	3,000	6,258
Karnataka	1981	8,415	4,402
Kerala	1958	10,159	1,334
	1981	11,038	2,301
Madhya Pradesh	1958	5,855	4,453
	1981	16,764	3,110
Madras	1958	9,066	3,306
Tamil Nadu	1981	7,145	4,760
Orissa	1958	900	8,136
	1981	2,250	11,676
Punjab*	1958	25,043	644
	1981	17,238	967
Rajasthan	1958	9,148	1,845
	1981	15,899	2,145
Uttar Pradesh	1958	32,137	1,967
	1981	41,030	2,703
West Bengal	1958	14,287	1,779
	1981	4,691	32.220
Delhi	1958	1,858	1,362
	1981	2,871	2,158
Himachal Pradesh	1958**	300	2,774
Manipur	1958**	200	2,888
Tripura	1958**	226	2,828

* Reorganised subsequently, hence data not comparable.

** There were no Ayurvedists reported in these places in 1981.

Source : For 1958: Government of India, Committee to study the Status of Ayurveda in India (Udupa Committee), Report, (New Delhi : Ministry of Health, 1958).
For 1981: GOI, DGHS, CBHI, 1983.

It would appear that qualified Ayurvedists have almost ceased to practice in Himachal pradesh, Manipur & Tripura. In Assam, West Bengal and Jammu & Kashmir the number of practitioners have declined, while Tamil Nadu, Orissa, Rajasthan, Uttar Pradesh, & Delhi have recorded lower growth rates vis-a-vis population growth.

A number of reasons can be suggested to explain the drop in the growth rate of ISM & H practitioners, but these need further research.

(1) From 1975 onwards, the registration of practitioners who had not undergone a regular college course of post-matric five years was stopped as a result of regulation.
(2) Certain technical modalities such as the requirement to register at the time of the IMCC election in 1983, may have helped to remove from the list those hereditary practitioners registered 'for life'.
(3) A high drop-out rate from practice, as most of the experienced practitioners are above 50 years of age.
(4) Several colleges have either stopped new admissions, reduced the number of seats, or have themselves closed down due to lack of prescribed minimum amenities.
(5) Natural death and old age.
(6) Graduates may be indifferent to registration. Hence, though in reality a larger number is entering practice, this is not reflected in the official records.
(7) Inaccurate or poor reporting and coverage of data by the CBHI.

B Research

The Central Council for Research in Indian Medicine and Homeopathy (CCRIMH) was established in 1969. Through its five scientific Advisory Boards, one each for Ayurveda, Siddha, Unani Homeopathy, and Yoga-Naturopathy, the Central Council guided & supervised research activities in a number of institutions. It was dissolved in January 1979, and four central councils on the lines of the Indian Council of Medical Research (ICMR) were constituted. These are the Central Council for Research in Ayurveda and Siddha (CCRAS), the Central Council for Research in Unani medicine (CCRUM), the Central Council for Research in Homeopathy (CCRH), the Central Council for Research in Yoga and naturopathy (CCRYN). These four apex bodies, wholly centrally financed, aid, guide, develop and co-ordinate scientific research through a number of Central & Regional Research Institutes, Regional Research Centres, Clinical and Drug Research Units etc.

The research activities include drug research, clinical research, health care or medicare research, literary research and research on indigenous contraceptive drugs. (23)

The Pharmacopoeial Laboratory for Indian Medicine and the Homeopathy Pharmacopoeia Laboratory, both offices of the Ministry of Health & Family Welfare, are national level laboratories entrusted with the responsibility of laying down standards regarding single drugs and compoundformulations, and drug testing procedure. (24) The former has a museum of medicinal plants which can facilitate the identification of herbs.

---

(23) GOI, MOHFW, 1985.

(24) Ibid.

Table II : ESTIMATED BIRTH AND DEATH RATES IN DIFFERENT STATES/UNION TERRITORIES, 1981-83.

STATES/UTs	AREA	ANNUAL RATE PER 1000 POPULATION					
		BIRTH RATE			DEATH RATE		
		1981	1982	1983*	1981	1982	1983*
Andhra Pradesh	C	31.7	31.2	31.7	11.1	10.6	10.3
	R	32.7	32.0	31.5	12.1	11.8	11.2
	U	27.5	28.0	27.7	6.5	6.5	6.9
Assam	C	33.0	34.2	34.1	12.6	12.4	11.7
	R	33.8	35.1	34.9	13.0	12.8	12.1
	U	23.2	23.9	23.7	8.0	7.8	6.7
Bihar	C	39.1	37.3	37.2	13.9	14.1	13.0
	R	39.7	37.8	37.7	14.7	14.8	13.5
	U	33.9	32.5	32.1	8.0	7.2	7.4
Gujarat	C	34.5	34.3	34.0	12.0	11.7	11.5
	R	36.1	35.6	35.2	12.4	13.2	12.8
	U	29.8	31.2	31.3	10.7	8.3	8.7
Harayana	C	36.5	36.7	35.9	11.3	9.2	9.0
	R	37.8	38.4	37.8	11.9	10.2	9.8
	U	29.6	30.1	29.7	7.6	5.7	6.5
Himachal Pradesh	C	31.5	32.5	32.5	11.1	9.5	10.2
	R	32.4	33.2	33.2	11.5	9.8	10.5
	U	17.3	22.9	22.2	5.1	4.5	6.3
Jammu & Kashmir	C	31.6	30.7	31.4	9.0	8.4	9.6
	R	33.9	33.2	33.2	9.7	9.1	9.1
	U	21.4	22.8	25.2	6.0	6.5	6.8
Karnataka	C	28.3	27.9	28.7	9.1	9.2	9.2
	R	29.2	28.8	29.8	10.2	10.2	10.5
	U	25.7	25.7	25.8	6.3	6.3	5.9
Kerala	C	25.6	26.2	24.9	6.6	6.6	6.7
	R	26.0	26.4	24.9	6.6	6.7	6.6
	U	23.5	25.1	24.6	5.8	6.6	6.7
Madhya Pradesh	C	37.6	38.5	38.5	16.6	14.9	14.5
	R	38.8	39.9	40.1	18.0	16.3	15.9
	U	31.4	32.4	31.1	9.3	9.0	8.5

Cont.

Table II (Cont.)

STATES/UTs	AREA	ANNUAL RATE PER 1000 POPULATION					
		BIRTH RATE			DEATH RATE		
		1981	1982	1983*	1981	1982	1983*
Maharashtra	C	28.5	29.8	29.6	9.6	8.8	9.1
	R	30.4	31.3	31.4	10.6	9.9	10.4
	U	24.5	26.3	26.2	7.4	6.7	6.6
Manipur	C	26.6	N.A.	28.6	6.6	N.A.	7.0
	R	26.8	23.3	30.0	6.8	7.1	7.3
	U	24.4	N.A.	23.9	4.5	N.A.	5.9
Meghalaya	C	32.6	31.1	30.0	8.2	8.9	8.3
	R	35.0	32.9	32.8	8.9	9.9	9.2
	U	18.5	23.1	17.2	4.3	4.4	4.4
Nagaland	C	-	-	22.9	-	-	6.9
	R	21.4	N.A.	23.8	5.3	N.A.	8.0
	U	-	-	18.6	-	-	1.4
Orrisa	C	33.1	33.4	33.3	13.1	13.0	12.1
	R	33.4	33.7	13.5	13.5	12.5	
	U	29.3	30.9	29.1	7.9	8.0	8.7
Punjab	C	30.3	30.4	30.2	9.4	8.4	9.5
	R	30.8	30.9	30.7	10.0	9.1	10.3
	U	29.5	28.7	28.8	7.1	6.4	7.3
Rajasthan	C	37.1	38.0	40.0	14.3	12.1	13.5
	R	38.3	39.3	41.5	15.8	13.3	14.4
	U	31.2	33.1	33.7	7.6	7.8	9.8
Sikkim	C	31.0	31.6	34.5	8.9	9.5	10.9
	R	32.2	32.6	36.0	9.9	9.9	12.2
	U	26.6	29.2	27.7	5.4	8.0	4.8
Tamil Nadu	C	28.0	27.7	27.8	11.8	11.2	11.6
	R	29.7	29.2	29.0	13.5	13.4	13.4
	U	23.9	24.9	25.6	7.9	7.4	8.2
Tripura	C	26.4	24.4	23.7	8.0	7.7	7.5
	R	27.6	25.1	24.5	8.2	8.0	7.8
	U	14.8	18.5	16.6	5.4	5.7	4.9

Table II(Cont.)

STATE/UT	AREA	ANNUAL RATE PER 1000 POPULATION					
		BIRTH RATE			DEATH RATE		
		1981	1982	1983*	1981	1982	1983*
Uttar Pradesh	C	39.6	38.6	38.4	16.3	15.1	15.7
	R	40.8	39.9	39.6	17.3	16.3	16.9
	U	31.5	32.5	21.3	9.9	9.4	10.4
West Bengal	C	33.2	32.5	31.9	11.0	10.4	10.2
	R	37.0	37.0	36.0	12.2	12.0	11.6
	U	20.0	20.4	21.3	6.9	6.3	6.6
A & N Islands	C	34.0	36.4	32.5	8.4	6.1	7.7
	R	35.5	38.4	34.4	9.2	6.7	8.6
	U	22.7	29.0	25.5	2.4	3.9	4.2
Arunachal Pradesh	C	-	34.2	35.4	-	15.9	17.3
	R	32.1	35.1	36.7	12.1	17.0	18.7
	U	-	22.4	19.9	-	2.6	1.5
Chandigarh	C	24.6	25.0	22.2	2.4	3.7	3.7
	R	32.9	31.9	27.4	5.9	9.5	6.7
	U	23.4	25.6	21.6	1.9	3.4	3.5
Dadra & Nagar Haveli	R	36.8	41.7	40.1	14.1	13.2	14.0
Delhi	C	26.9	28.7	27.7	7.1	7.6	7.2
	R	36.0	35.5	33.1	8.4	8.4	8.4
	U	25.8	27.8	27.0	7.5	7.5	7.0
Goa Daman & diu	C	15.5	21.4	21.0	6.8	7.2	7.3
	R	16.3	22.0	21.8	7.7	7.8	8.1
	U	13.2	20.4	19.5	4.3	6.0	5.9
Lakshdweep	C	-	-	31.5	-	-	9.6
	R	29.7	29.3	34.6	8.4	7.5	9.4
	U	-	-	27.8	-	-	9.9
Pondicherry	C	21.7	23.8	22.7	7.3	6.5	9.0
	R	22.8	23.5	23.0	7.3	7.3	10.5
	U	14.7	23.9	22.6	7.2	6.1	6.6

Table II(Cont.)

STATE/UT	AREA	ANNUAL RATE PER 1000 POPULATION					
		BIRTH RATE			DEATH RATE		
		1981	1982	1983*	1981	1982	1983*
India (excluding Bihar & W.Bengal)	C	33.9	33.8	33.6			
India (including Bihar & W.Bengal)	C				12.5	11.9	11.9
	R	35.6	35.5	35.3	13.7	13.1	13.0
	U	27.0	27.6	28.0	7.8	7.4	7.7

* : Provisional

Note : There is no urban sample in Dadra & Nagar Haveli.

Source : GOI, DGHS, CBHI, 1985, Table 2.2, pp. 36-38 and Table 2.3, pp.39-41.

Table II (a) : FERTILITY INDICES: 1972, 1978 AND 1981

	(Rural = 80%) 1972*			(Rural = 78%) 1978*			(Rural = 75%) 1981**		
	TOTAL	RURAL	URBAN	TOTAL	RURAL	URBAN	TOTAL	RURAL	URBAN
1. General fertility rate (Children per 1000 women in reproductive age group)	160.8	166	140	129.3	137	102	112	119	91
2. General marital fertility rate (children per 1000 married women in reproductive age group)	187.4	191	173	164.3	170	144	139	143	123
3. Total fertility rate (children per married woman completing reproductive life-span)	5.2	5.4	4.3	4.3	4.6	3.2	3.6	3.9	2.8
4. Total marital fertility rate (children per married woman completing reproductive life-span)	6.6	6.8	6.0	5.1	5.4	4.6	4.3	4.5	3.8
5. Gross reproduction rate (daughters per woman completing reproductive life-span)	2.58	2.7	2.1	2.0	2.2	1.5	...	...	...

Source : * : GOI, Office of the Registrar General of India, Survey Report on Levels, Trends and Differentials in Fertility, Statement Nos 4 & 7, (New Delhi, Ministry of Home Affairs, 1979), pp. 3-4.

** : GOI, Registrar General & Census Commissioner of India, Census of India 1981, Series - 1 India, Part II, Special Report & Tables Based On 5 Per-Cent Sample Data, (New Delhi : The Controller of Publications, 1984), pp. 40-46.

Fertility indices: The decline in the birth rate was negligible upto 1941, averaging 2.8 per cent per decade since the 1911-21 period. It howover registered sharp fall (11.7%) between 1941-51 due to the deepening political crises of the Independence struggle. The 1951-61 decade represents a post crisis baby-boom with the birth rate rising by 4.5 per cent per annum (Table I). The census decade 1961-71 did not see any significant decline in fertility thus pushing up the growth rate drastically. But in the following decade (1971-81) crude birth rate declined by 10 per cent and total fertility rate went down from 5.2 per woman to 3.6 per woman (Table II(a)) due to the accelrated camp approach and the coercive family planning programme during the national 'Emergency'. The overall birth rate of 34 per 1000 population (1983 estimates) varies from 40.0 per 1000 for Rajasthan, 38.5 per 1000 for Madhya Pradesh, 38.4 per 1000 for Uttar Pradesh to 24.9 in Kerala, 27.8 in Tamil Nadu and 28.7 in Karnataka (Table II).

Age structure and Fertility: The present population is estimated to be growing at a rate of 2 per cent per annum (Table I). Given the already wide population base, this means an addition of 13.7 million people to the total population every year. The implications of this addition are serious. For example, almost 40 per cent of the population is made up of the 0-14 age group, resulting in a high dependancy ratio for India (0.75 as against 0.49 to 0.56 in the developed nations). (4) Between 1971-81 the age structure has shown some variation, with the percentage distribution of population in the 0-14 age group declining from 42.02 per cent to 39.54 per cent. Consequently in the reproductive age group (15-44 years) there has been an increase from 41.73 per cent (42.03 female) to 43.24 per cent (43.4 female) (see Table III).

Table III : PERCENTAGE DISTRIBUTION OF POPULATION BY AGE-GROUP, 1971 AND 1981.

AGE GROUP	1971			1981*		
	PERSONS	MALES	FEMALES	PERSONS	MALES	FEMALES
0-4	14.51	14.15	14.90	12.59	12.33	12.87
5-9	14.96	14.86	15.07	14.07	14.02	14.12
10-14	12.55	12.85	12.22	12.88	13.14	12.60
15-19	8.66	8.88	8.42	9.63	9.85	9.38
20-24	7.86	7.60	8.15	8.61	8.42	8.82
25-29	7.45	7.16	7.75	7.63	7.49	7.78
30-34	6.60	6.45	6.77	6.38	6.28	6.49
35-39	6.00	6.07	5.93	5.85	5.79	5.90
40-44	5.16	5.30	5.01	5.14	5.25	5.03
45-49	4.18	4.39	3.94	4.40	4.48	4.30
50-54	3.75	3.91	3.57	3.82	4.02	3.61
55-59	2.34	2.42	2.25	2.47	2.48	2.47
60-64	2.62	2.64	2.61	2.73	2.73	2.73
65-59	1.28	1.28	1.27	1.43	1.39	1.47
70 +	2.06	2.02	2.12	2.33	2.28	2.39
Age not stated	0.02	0.02	0.02	0.04	0.05	0.04

* : Excludes Assam

Source : GOI, Registrar General & Census Commissioner for India, 1984, Statement 3, p.26.

(4) World Bank, World Development Report:1983, (Washington : World Bank, 1983).

2. POPULATION POLICY AND FAMILY PLANNING IN INDIA

Any government has a choice of two broad alternatives by way of a population policy: pro-natalist or anti-natalist. Mortality decline is an universally accepted goal; the main target of any statement on population policy is human fertility. Most developing countries today are persuing anti-natalist policies which aim at fertility control and decline, and are governed by the concept of family planning or planned parent-hood.

India was the first independent country in the world to adopt a policy, in 1951, of reducing population growth through a government sponsored national family planning programme. A decade earlier, in 1941, the health sub-committee of the National Planning Committee of the Indian National Congress, had identified population growth as the cause of poverty and underdevelopment. (5) The plan documents have recognised population growth as one of the important factors determining the rate of economic development. The First Five Year Plan (6) stated that, "The recent increase in the population of India and the pressure exercised on the limited resources of the country have brought to the forefront the urgency of the problem of family planning and population control.... population control can be achieved only by the reduction of the birth rate to the extent necessary to stabilize the population at a level consistent with the requirements of national economy". Faced with a rising birth rate, the Third Plan (7) stated that "the objective of stabilising the growth of population over a reasonable period must therefore be at the very centre of planned development".

Plan Period: 1951-86

Family Planning has been given a progressively higher priority in each development plan. The budgetry allocations have risen from Plan to Plan (Table IV). (8)

Organization of the Family Planning Programme (9)

A family planning cell was established in the Planning Development Section of the Directorate General of Health Services in 1952. Since its inception the programme has been the responsibility of the Ministry of Health. It is centrally sponsored and financed but the primary responsibility for implementation lies with the states.

The organizational structure of the programme has been modified with each successive shift in policy and perspective. By the Third Plan, a full fledged Department of Family Planning was established within the Health

---

(5) National Planning Committee, (Chairman Jawaharlal Nehru), Report, (Bombay: Vora, 1949).

(6) Government of India, Planning Commission, First Five Year Plan 1951-56, (New Delhi Planning Commission, 1952), p.533.

(7) GOI, Planning Commission, Third Five Year Plan 1961-66, (New Delhi : Planning Commissio 1961), p. 25.

(8) See also the chapter on Health Expenditure in this volume.

(9) See also chapter on Health Organisation & Personnel Planning in this Chapter.

Table IV : PATTERN OF INVESTMENT (PLAN OUTLAYS) IN DIFFERENT PLAN PERIODS IN HEALTH AND FAMILY WELFARE (Rs. CRORES).

PERIOD	TOTAL PLAN INVEST-MENT/OUT (Rs)	PERCEN-TAGE CHANGE	HEALTH (Rs)	PERCEN-TAGE CHANGE	FAMILY WELFARE (Rs)	PERCEN TAGE CHANGE	RATIO OF FAMILY PLANN-ING : HEALTH
I Plan (1951-56) actuals	1,960.0	..	65.2 (3.3%)	..	0.1	..	0.00
II Plan (1956-61) actuals	4,672.0	138.36	140.8 (3.0%)	115.95	2.2 (0.1%)	2100.00	0.01
III Plan (1961-66) actuals	8,576.0	83.57	225.9 (2.6%)	60.44	24.9 (0.3%)	1031.81	0.11
Annual Plan (1966-69) Actuals (3 - year period)	6,625.4	-22.74	140.2 (2.1%)	-37,93	70.4 (1.1%)	182.73	0.50
IV Plan (1969-74) actuals	15,778.8	135.13	335.5 (2.1%)	139.30	278.0 (1.8%)	294.88	0.83
V plan (1974-79) actuals	39,426.2	152.40	760.8 (1.9%)	126.76	491.8 (1.3%)	76.90	0.65
VI Plan (1980-85) outlay	97,500.0	147.29	1821.1 (1.9%)	139.36	1010.0 (1.8%)	105.36	0.55
VII Plan (1985-90) outlay	1,80,000.0	84.61	3392.9 (1.9%)	86.31	3236.3 (1.8%)	222.37	0.96

Source : Complied from Government of India, Year Book of Family Welfare Programme in India 1981-82, (New Delhi : MOHFW, 1982), Table H-2, p.173; GOI, Seventh Five Year Plan 1985-90, (New Delhi :Planning Commission, 1985).

Ministry and the latter was re-designated the Ministry of Health and Family Planning. A Central Family Planning Council (CFPC), with the Union Minister for Health and Family Planning as its chairman, and including all state health ministers, was set up to review the progress of the family planning programme and to make policy decisions. Similar councils were established at the State level.

At present policy formulation is done by the Union Government in consultation with State Governments. At the Centre, an Additional Secretary cum Commissioner (Family Welfare) supervises the secreterial and technical divisions of the Department of Family Welfare, as well as programme implementation in the States.

The Department of Health and Family Welfare of each state has a family Welfare Cell, headed by an officer of the rank of a Secretary, to co-ordinate family welfare activities. Each State Directorate of Health and Family Welfare has a Family Welfare Bureau headed by the Joint Director of Family Planning and Maternal and Child Health. There are also the District/City Family Welfare Bureaux, Rural Family Welfare Centres attached to Primary Health Centres, a net work of sub-centres, Urban Family Welfare Centres in urban areas and post partum centres attached to hospitals at the district level and sub-divisional levels. (10)

Clinic Approach

Since India was the first country to organize a national family planning programme, she had no Third World model to follow. All her concepts and ideas regarding family planning were adopted from the West. The clinic approach was followed in the First and Second Plan periods in the tradition of the family planning clinics and the planned parenthood movement in the West. Such clinics were already established by voluntary organizations like the Family Planning Association of India (FPAI) (affliated to the International Planned Parenthood Federation), and the Red Cross.

Clinics were established in urban and rural areas. They functioned on the assumption that those who needed family planning would on their own intitiative approach the clinics; the approach ruled out any attempts to reach out to the people. The officially sanctioned method was the rhythm method, and the clinics offered services for women rather than for the couple. The 1961 census figures showing a decadal growth rate of 21.6 per cent and an increase in population from 36.10 to 43,91 crores (Table-I), demonstrated the poor out-reach of the clinic approach and its lack of impact on birth rates. (11)

Extension Approach

The Third Plan (1961-66), taking its cue from the community development movement in the United States, adopted the extension approach. The emphasis was on educating the people, in order to changing their knowledge contents, atitudes and behaviour regarding family planning. Influential formal and

---

(10) Government of India, Annual Report 1984-85 (New Delhi : Ministry of Health and Family Welfare, 1985), pp. 105-106.

(11) B.L. Raina, Family Planning Programme : Report for 1962-63, (New Delhi : Ministry of Health & Family Planning, 1963), p.5.

informal leaders from different subgroups of the population were first identified; they were encouraged to gain knowledge and take interest in popularising the accpetance of the small family norm among their own sub-group. (12) This would involve the active participation of panchayat samitis, village development committees and other groups, and resulted in the deployment of a large number of family planning extension workers. (13)

In the mid-sixties the programme was expanded and efforts were made to popularise the intra uterine device (IUD).

Camp Approach

The first mass vasectomy camp in the world was organised by the Government of Maharashtra as early as 1961 (14). In 1970 a massive camp was held at Ernakulam in Kerala which achieved a performance of 15,005 vasectomies over a period of a month. The camps began to be favoured by the Department of Family Planning and in 1971-72, 61 per cent of the total 19 million vasectomies were performed in mass camps (15). The success of the earliest camp was attributed to good organization, special precautions to minimise surgery risks, the festive atmosphere that dispelled any notion of secrecy and embarassment, and the government co-operation at all levels. However all the camps were not successful. Deaths and post-operative infections due to the poor quality of service and insufficient supervision, as also a certain element of coercion in the way acceptors were being brought for vasectomy, caused a setback. The number of sterilizations fell from 3.12 million (1972-73) to 9.42 lakhs (1973-74) (Table V).

The Ministry of Health and Family Planning decided to play down this approach in spite of its impressive record and reduced the family planning budget by 6 crores in 1973-74, the exact amount that had been earmarked for vasectomy camps. The reason given was that in a larger perspective these camps were counter-productive and that they required very careful management and precautions to make them a success. The latter was only a guise for the insanitary conditions in the camps that had resulted in several deaths. (16)

The National Population Policy (1976) (17)

The National Population Policy was declared in 1976 during the National Emergency. The aim was to reduce the birth rate from 35 to 30 per 1000 population by 1979, and to 25 per 1000 by 1985. The various approaches outlined in the statement included certain political measures, such as providing 8 per cent of central assistance to state plans specifically

---

(12) Bhende and Kanitkar, 1978, p.535.

(13) See also the chapter on 'Health Education' in this volume.

(14) "Vasectomy Camps in Satara", Family Planning News, Vol.V, No.3, 1964, p.20, cited in Bhende & Kanitkar, 1978.

(15) Bhende and Kanitkar, 1978, p.539.

(16) "Civilized Presure but not coercion", People, Vol.III, No.4, 1976.

(17) Government of India, National Population Policy, (New Delhi: Ministry of Health and Family Planning, 1976).

Table V : YEAR-WISE ACHIEVEMENT OF TARGETS OF STERILIZATIONS-ALL INDIA (1969-70)

YEAR	TARGET	ACHIEVEMENT	ACHIEVEMENT (%)
1969-70	2,215	1,422	64.2
1970-71	2,600	1,330	51.2
1971-72	2,079	2,187	105.2
1972-73	5,697	3,122	54.8
1973-74	2,268	942	41.6
1974-75	2,000	1,354	67.7
1975-76	2,492	2,669	107.1
1976-77	4,299	8,261	192.2
1977-78	3,990*	949	23.8
1978-79	3,965	1,484	37.4
1979-80	3,049	1,778	58.3
1980-81	2,896	2,053	70.9
1981-82	2,896	2,792	96.4
1982-83	4,522	3,983	88.1
1983-84**	5,900	4,532	76.8

* : Targets (levels of expectation) not insisted upon for the year.

** : Figures are provisional.

Source : Government of India, Year Book of Family Welfare Programme in India 1983-84, (New Delhi : MOHFW, 1984, Table D-5, p.114.

against the state's family planning performance, and freezing representation in the Lok Sabha and the state legislatures on the basis of the 1971 census for the next 25 years. The other measures included raising the age at marriage to 18 years for girls and 21 years for boys, special measures for raising the level of female education, vigorous MCH work in the field of child nutrition, and including health education and population dynamics studies in school curriculi. However, the most controversial part of the statement was the proposed legislation for compulsory sterilization of couples with a certain number of children. Only one state, Maharashtra, actually tables the legislation (Cumpulsory Sterilization Bill of the State of Maharashtra: L.A. Bill No. XXV of 1976).

The period of the Emergency (1975-77) was one of spectacular achievements for the family planning programme. Some 2.65 million sterilization were performed in 1975-76, achieving an increase of 97 per cent over the previous year. In 1976-77 the performance rose to 8.11 million showing an increase of 210 per cent (Table V). Targets were overachieved, and the birth rate was estimated to have fallen to 34.3 per 1000. (18) The programmes achieved their greatest success in the north, which traditionally has had a low level of acceptance. The national capital New Delhi surpassed all other areas with 477.6 per cent achievement of sterilization targets (1976-77).

A close look at this period shows the skillful use of incentives (a feature of Indian Family Planning Programmes for over 20 years) and disincentives. Great pressure was applied through many kinds of disincentives or panalties which became a permanent feature of the compaign. "... the range of penalties covered were astonishingly large. The sterilization operation became necessary for jobs, ration cards and licences". (19)

The policy was implemented in a way that was an assault on human dignity. There were allegations that unscrupuous motivators, lured by the prospects of financial rewards, displayed little discrimination in dragging adolescents and impotent old men to the operating table. Several deaths were blamed on insanitary camp arrangements. (20)

The Integrated Approach

In principle, the integrated approach to family planning was recognised as early as the First Plan. The Second Five Year Plan clarified that 'Family Planning Service is likely to succeed if the clinics are associated with maternity and child health (MCH) work or with centres which provide medical aid and welfare services. (21)

However it was in the Fifth Five Year Plan (1974-79) that the family planning programme was made an integral part of the Maternal and Child

---

18) Government of India, Family Welfare Programme in India Year Book 1981-82, (New Delhi : Ministry of Health and Family Welfare, 1982).

19) Margaret Wolfson, Changing Approaches to Population Problem, Development Centre Studies, (Paris: OECD and World Bank, 1978) p.41.

20) People, 1976.

21) GOI, Family Planning In India - April 1956 - November 1958, (New Delhi : Ministry of Health, 1959), p.5.

Health and Nutrition Services. The change in strategy was expected to result in greater acceptance of the programme among the people (22). These services formed part of a bigger package called the Minimum Needs Programme. Its various components, ranging from education and health to environemental improvement, was expected to have an appreciable impact on the socio-economic status of the people and consequently, a greater impact on their fertility behaviour.

The Union Minister of Health asserted at the World Population Conference at Bucharest in 1974 : "Population policy is thus one of the several vital instruments and it cannot be effective unless certain concomitant economic policies and social programmes succeed in changing the basic determinants of high fertility. It has truely been said that the best contraceptive is development". (23)

At present the special schemes under the family planning programme include -

(a) immunization of infants and pre-schoolers against DPT;
(b) immunization of expectant mothers against tetanus;
(c) prophylaxis against nutritional anaemia among mothers and children; and
(d) prophylaxis against blindness caused in children due to vitamin A deficiency.

The advent of the multi-purpose workers (MPW) scheme in 1973 has given a filip to the integrated approach. Under this scheme, it is envisaged that the integration of health and family planning activities and nutrition education will take place from the subcentre through the Primary Health Centre, and from the district levels to the States. (24)

Family Planning Methods

The family planning programme has adopted the 'cafetaria' approach regarding the methods of contraception. All methods are offered to the people. These include the rhythm method, conventional contraceptives like diaphragms, jellies, foam tablets, condoms (Nirodh), the intra-uterine, device (IUD), the oral pills, and male/female sterilization. Each has received emphasis at varying times, starting with the promotion of the rhythm method in the early fifties, followed by the foam tablets. Vasectomy and condoms were popularised only towards the end of the fifties and in the early sixties. In the second half of the sixties the IUD was given a central place in the programme. With the decline in its popularity due to complications and the requirement for a permanent method, sterilizations were stressed. Later oral pills were made available and, at present, these are distributed free of cost to acceptors along with conventional contraceptives. The latest popular technique is laparoscopic tubectomy. By 31st October 1984, 2,071 trained laparoscopic teams were available in the country. (25)

---

(22) GOI, Fifth Five Year Plan 1974-79, (New Delhi : Planning Commission, 1976), p.5.

(23) Karan Singh, Population, Poverty and the Future of India, (New Delhi : National Institute of Family Planning, 1975), p.5.

(24) GOI, Family Welfare Planning in India - Year Book 1974-75. (New Delhi : Ministry of Health & Family Planning, 1975), p.15.

(25) GOI, 1985, p.116.

Between 1981-84 the number of conventional contraceptive users rose to 7.7 million (from an average of 3 to 3.5 million in the 1973-81 period). Ninety per cent of this usage is claimed by Nirodh (condom). It is distributed all over India through the (a) Free distribution scheme, (b) Depot holder distribution scheme and (c) The Nirodh Marketing Programme. The latter programme recorded a sale of 198 million pieces in 1983-84. (26)

The Medical Termination of Pregnancy (Induced Abortion) Act was passed in 1971. A total of 10,132 doctors (provisional figures) have been trained in MTP technique since its inception, while a total of 32,11,185 pregnancies are reported to have been terminated upto December 1984. (27)

The Janata Government (1977-79) ruled out the use of coercion which had marked the Emergency period, and stressed the welfare approach to family planning, i.e. preventive health services, safe water for drinking, adequate sanitation, and the integration of family welfare programme with other welfare schemes for nutrition, shelter, clothing, food, education and women's welfare. The designation of the programme was changed from 'Family Planning' to 'Family Welfare' so as to reflect the Government's anxiety to promote through it the total welfare of the family and the community. The programme was made wholly voluntary and educational.

The Congress Government, which returned to power in 1980, also stressed the integrated approach by including the Family Welfare Programme in its new 20-point programme.

Pattern of Financial allocation

The trend in financial allocations in the Five Year Plans for family planning and health present a an interesting picture (Table IV).

The financial outlay for family planning rose by 2100 per cent from the First to the Second Five Year Plan. This is understandable as the allocation in the former period was negligible. In the same period the investment in the health sector increased by 116 per cent, while that of the total plan increased by 138 per cent.

Between the Second and the Third Plan, the allocation to the health sector grew only by 60 per cent, whereas family planning took another leap forward, achieving an increase of 1032 per cent. In the three Annual Plans that followed, and in the Fourth Five Year Plan, the health sector allocation remained almost stagnant, whereas that of family planning rose sharply. The health sector continued to be neglected till the Fifth Plan, when the Bucharest Conference shifted the focus to 'development'.

The Fifth Five Year Plan adopted the strategy of an assault on poverty through the 'Minimum Needs Programme'. For the first time, health received a priority over family planning. The trend in the ratio of family planning to health allocation was reversed. It changed from 0.84 in the Fourth Plan to 0.72 in the Fifth Plan, and fell to 0.55 in the Sixth Plan, which was also the average for the period 1951-1985 (See Table IV).

The reversal in the trend of allocation was a response to the universal experience of the developing countries, that high rates of infant mortality

---

(26) Ibid, p. 118-119.

(27) Ibid, p.120.

The Fifth Five Year Plan adopted the strategy of an assault on poverty through the 'Minimum Needs Programme'. For the first time, health received a priority over family planning. The trend in the ratio of family planning to health allocation was reversed. It changed from 0.84 in the Fourth Plan to 0.72 in the Fifth Plan, and fell to 0.55 in the Sixth Plan, which was also the average for the period 1951-1985 (See Table IV).

The reversal in the trend of allocation was a response to the universal experience of the developing countries, that high rates of infant mortality were responsible for the resistance to the 'small family' norm. The traditional hypothesis that improved health necessarily accelerates population growth was discarded, and an alternative hypothesis that high rates of infant mortality encourage high fertility, gained widespread political acceptance. (28) This change in thinking resulted in a new slogan and target for the developing countries, namely "Health for All by the year 2000", at the International Conference On Primary Health Care Approach at Alma Ata in 1978.

However the ratio proportion of allocation between family welfare (Rs. 3256.3 crores) and health (Rs. 3392.89 crores) is the highest ever in the Seventh Plan (=0.96).

International Assistance:

India, like most other developing countries, has received liberal assistance for population control from foreign (western) governments, multilateral agencies (UN, WHO etc.) and private Foundations (IPPF, Ford Foundation, Rockefeller etc.) (See. Table VI). These funds have fluctuated between 8 per cent and 23 per cent of India's public expenditure on family

Table VI : DETAILS OF THE INTERNATIONAL ASSISTANCE TO GOVERNMENT (1976-77 TO 1981-82)

NAME OF THE FOREIGN AGENCY	ASSISTANCE RECEIVED (RS. IN CRORES)					
	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82
IDA/SIDA	6,013	4.00	3.7661	8.8122	1.70	8.56
NORAD	2,3276	4.6253	5.20	5.0481	5.7692	6.3847
UNICEF	0.895	0.536	0.23	0.8805	1.0332	1.2571
DANIDA	0.45	0.3539	0.66	0.6844	0.858	1.7219
WHO	..	..	..	..	..	0.0002
UNFPA	1.653	5.9252	12.0812	5.9303	2.5789	5.3134
SIDA	1.6516	3.4316	0.2144	0.05	0.1770	..
FRG	0.2809	0.211	..	0.05	..	..
UK	..	0.9244	2.3243	0.86	0.5338	3.00
USAID	..	..	..	..	0.2203	1.00
TOTAL	13.2711	20.0074	24.476	22.8704	12.8704	27.2453*

* : Provisional
Source : GOI, MOHFW, 1982, Table H-5, p. 175.

(28) World Bank, Health Problem and Policy in Developing Countries, World Bank Staff Working Paper No.412, (Washington : World Bank, 1980).

planning in the seventies (Table VII).

Table VII : PERCENTAGE OF EXTERNAL ASSISTANCE TO TOTAL EXPENDITURE FOR FAMILY PLANNING (1972-1982)

YEAR	FOREIGN (PUBLIC) ASSISTANCE RECEIVED	PERCENTAGE CHANGE	TOTAL GOVT. EXPENDITURE (RS.CRORES)	PERCENTAGE CHANGE	PERCENTAGE OF FOREIGN ASSISTANCE TO TOTAL EXPENDITURE
1972-73	7.35	..	79.75	..	9.22
1973-74	5.63	-24.5	57.85	-27.4	9.73
1974-75	7.78	38.2	62.05	7.3	12.54
1975-76	11.77	51.3	80.61	29.9	14.60
1976-77	13.27	12.7	172.98	114.6	7.67
1977-78	20.01	50.8	93.34	-46.0	21.44
1978-79	24.48	22.3	107.56	15.2	22.76
1979-80	22.32	- 9.1	118.51	10.2	18.79
1980-81	12.87	-43.4	141.92	19.7	9.07
1981-82*	27.25	111.7	183.90	29.6	14.82
1972-1982	152.54	..	1098.47	..	13.8865

* : Provisional
Source : GOI, MOHFW, 1982, Table H-5, P.176.

It can be observed from the trend in foreign funding, that as India's camp approach got established and targets were being over-achieved (see Table V) the amount of aid also kept/pace. For example, in 1976-77 the target achievement for sterilizations was 192.2 per cent; as a result foreign aid for population control increased by 50.8 per cent in the following year (Table VII). It decreased sharply during the Janata Government's tenure, but a year after the Congress (I) came back to power and target achievement was once again stressed, aid rose by 111.1 per cent.

Sixth Five Year Plan

The Sixth Plan incorporated the recommendations of the Planning Commission Working Group on Population Policy (1980). (29) These include the adoption of the long-term demographic goal of reducing the net reproduction rate (NRR) to 1.0, from the present 1.67 by 1996 for the country as a whole, and by 2001 in the states. This would imply:

(i) a reduction in the family size from 4.2 children 2.3 children;
(ii) a fall in the birth rate to 21 per 1000 population;
(iii) reduction in mortality rates from 14 per 1000 population (1978) to 9 per 1000, and in infant mortality rate from 129 to 60 per 1000 live births;
(iv) protection of 60 per cent of eligible couples as against the present 22 per cent (1981);
(v) stabilization of the population at around 1200 million by 2050 A.D.

(29) Government of India, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi Planning Commission 1981), pp. 374-75.

Table VIII : MONTH-WISE FINAL CONFIRMED FIGURES OF PERFORMANCE BY VARIOUS FAMILY PLANNING METHODS (MAHARASHTRA STATE, 1982-83)

MONTH & YEAR	VASECTOMY	TUBECTOMY	TOTAL STERILIZATIONS	PERCENT TUBECTOMIES	TOTAL IUD INSERTIONS	CONDOMS (PIECES) NON-STERILISED PERSONS ONLY	ORAL PILLS (CYCLES)
1. APRIL 1982	3236	12544	15780	79%	2848	1220027	40054
2. MAY 1982	3020	15265	18285	83%	3090	1112682	34108
3. JUNE 1982	6729	21292	28021	76%	3304	1331466	34795
4. JULY 1982	6157	20270	26427	77%	3711	1562398	38429
5. AUGUST 1982	9905	24107	34012	71%	3620	1662593	42879
6. SEPTEMBER 1982	24190	45265	69455	65%	4554	1844065	50163
7. OCTOBER 1982	19175	32662	51837	63%	4084	1804416	54415
8. NOVEMBER 1982	17500	31732	49232	64%	3772	1794126	57508
9. DECEMBER 1982	27249	42695	69944	61%	5130	1990368	76433
10. JANUARY 1983	17027	39207	56279	70%	10893	2148806	69196
11. FEBRUARY 1983	30618	43364	73982	59%	14764	2713389	110034
12. MARCH 1983	45906	83264	129170	64%	34354	2890023	112282
13. TOTAL 1982-83	210757	411667	622424	66%	94124	22074359	720296
14. PERCENT ACHIEVEMENT: DECEMBER TO MARCH PERIOD	57.3%	50.6%	53%	..	69%	...	...

Source : Compiled from Document No. SFWB/D & E/GOI/ANN-OON/82-83, Joint Director of Health Services, Government of Maharashtra, Pune, July 20, 1983.

Table IX : SEX-WISE BREAK-UP OF STERILIZATION OPERATIONS PERFORMED SINCE 1956 & IUD INSERTIONS SINCE 1969-70

YEAR	NUMBER OF STERILISATIONS			PERCENTAGE OF TUBECTOMIES TO TOTAL	IUD INSERTIONS
	VASECTOMY	TUBECTOMY	TOTAL		
1956	2,395	4,758	7,153	66.5	..
1957	4,152	9,584	13,736	69.8	..
1958	9,189	15,959	25,148	63.5	..
1959	17,633	24,669	42,302	58.3	..
1960	37,596	26,742	64,338	41.6	..
1961	63,880	40,705	104,585	38.9	..
1962	112,357	45,590	157,947	28.9	..
1963	114,621	55,625	170,246	32.7	..
1964	201,171	68,394	269,565	25.4	..
1965 Jan-					..
1966 March	576,609	94,214	670,823	14.0	..
1966-67	785,378	101,990	887,368	11.5	..
1967-68	1,648,152	191,659	1,839,811	10.4	..
1968-69	1,383,053	281,764	1,664,817	16.9	..
1969-70	1,055,860	366,258	1,422,118	25.8	459,000
1970-71	878,800	451,114	1,329,914	33.9	476,000
1971-72	1,620,076	567,260	2,187,336	25.9	488,000
1972-73	2,613,263,	508,593	3,121,856	16.3	355,000
1973-74	403,107	539,295	942,402	57.2	372,000
1974-75	611,960	741,899	1,353,859	54.7	433,000
1975-76	1,438,337	1,230,417	2,668,754	46.1	607,000
1976-77	6,199,158	2,062,015	8,261,173	25.0	581,000
1977-78	187,609	761,160	948,769	80.2	326,000
1978-79	390,922	1,092,985	1,483,907	73.7	552,000
1979-80	472,687	1,305,237	1,777,924	73.4	635,000
1980-81	438,909	1,613,861	2,052,770	78.6	628,000
1981-82	573,469	2,218,905	2,792,374	79.5	754,000
1982-83	585,489	3,397,700	3,983,189	85.3	1,037
1983-84*	661,047	3,870,626	4,531,673	85.4	2,131

* : Figures are provisional.

Source : Government of India, Year Book of Family Welfare Programme in India 1983-84, (New Delhi, MOHFW, 1984), Tables D.2 & D.5.

This goal of protecting 78 million couples as against the current achievement of 27 million (1980-81) (30), is unfortunately being achieved by taking advantage of the poorest sections of the society. The strategy of incentives, i.e. financial compensation for acceptance of sterilization, is directed at the rural poor with monthly incomes below this sum. Today the total amount for every tubectomy is Rs. 200/-, and for a vasectomy Rs.180/- (31). The poor particularly fall prey to this 'carrot' in the December - March period when employment is scarce, savings are ebbing and the family planning work-force is stepping up pressure for acceptance, in order to fulfill lagging targets before the end of March. In Maharashtra, reputed for the best performance rates in terms of meeting family planning targets, 53 per cent of sterilizations and 69 per cent of IUD insertions for the year 1982-83 took place in the December - March period (Table VIII).

The burden of family planning acceptance is increasingly being borne by women (Table IX). From the fifties to the sixties there was a decline in the number of female acceptors of sterilization, but in the post emergency period there has been a sharp rise in the percentage of tubectomies. IUD acceptance is similarly on the rise, further adding to the number of female acceptors (see Table X for the estimate of male and female acceptors in the State of Maharashtra).

Table X : USERS COVERED BY STATE INTERVENTION (MAHARASHTRA)

	1981-82	1982-83
Tubectomy acceptors	295244	411667
IUD acceptors	40698	94124
Oral Pill users	25525	55407
TOTAL FEMALE ACCEPTORS ...	361467	561198
Vasectomy	199360	210757
Condom *(non-sterilised persons)	242039	306911
TOTAL MALE ACCEPTORS ...	441399	517668
Total Acceptors	802866	1078866
Percent female acceptors	45%	52%
Percent female tubectomies	60%	66%

* : Includes diaphragm, jellies, foam tablets, but number of users are insignificant.

Source : Compiled from Document No. SFWB/D & E/GOI/ANN-DON/82-83, Joint Director of Health Services, Government of Maharashtra, Pune, July 20, 1983.

There are several factors responsible for this situation. The male belief that vasectomy isweakening; the fear of harassment or humiliation

---

(30) If an average growth rate per annum of 1.5% is assumed, then the female population in 1996 would be 405.20 million. Assuming that 40% of the female population (i.e. 162 million) would be in the reproductive age group (15-44) and 80% of these would be married (i.e. 130 million), then 60 per cent couple protection would mean covering 78 million couples.

(31) GOI, 1985, p.117.

from the community if the wife of a vasectomised man becomes pregnant (due to vasectomy failure of 'transitional' fertilization, leading women to voluntarily accept tubectomy to protect themselves from humiliation); the main thrust of the family planning campaign being through the Maternal and Child Health (MCH) programme, thus making women automatically the targets; the combination of high infant and child mortality rates and the adverse status of women, which reinforces the traditional male attitude that if a man is not sterilized, he can take on another wife and procreate. Furthermore, women who have to bear the burden of child-bearing and rearing, quite often voluntarily accept a non-terminal family planning method (sometimes even terminal) without the knowledge of their family members. And finally, the abuse of vasectomy during the 'emergency' period has discredited the method among the male population.

New Population Control Approaches

New family planning methods are being emphasised in an attempt to overcome the stagnation in the birth rate at the 1979 level of 33 per 1000 population, and to achieve the 60 per cent couple protection rate by 2000 A.D. from the present 35 per cent. The accent today is on spacing methods and the ICMR is testing long-acting hormonal contraceptives for this purpose. Nor-Ethisterone - Ethanate (Net-En) is an injectible contraceptive that prevents pregnancy for 2 months after administration, while Norplant - II is a subdermal hormonal contraceptive implant which remains effective for over a year. (32) However the lack of long-term studies to assess the risks of injectibles & implants has raised a controversy regarding their introduction in the Indian programme.

3. POPULATION, HEALTH AND DEVELOPMENT

As indicated earlier, India's strategy to tackle the problems of poverty and impoverishment has been through the reduction of human fertility. This emphasis in India's development strategy has emerged not from an understanding of its own problems, but from the aggressive promotion of the neo-Malthusian school of thought dominant in the developed nations of the West and spearheaded by private organizations, both national and international. (33)

The experience of the developed countries has shwn that resource utilization and production were not constrained merely by population growth. Infact with industrial growth and improvement in medical care, the developed countries witnessed a much higher population growth rate than the developing countries, right upto World War II (Table **XI**). Only after the war, when drastic declines in mortality began to be recorded in the developing countries, did their population growth rates outstrip that of the developed world.

---

(32) GOI. Annual Report 1984-85, (New Delhi : Ministry of Health & Family Welfare, 1985), P.107; Indian Council of Medical Research, Summary Highlighting ICMR Research Activities During the year 1986-87, (New Delhi : ICMR, 1986), p.34-36.

(33) For the history of the population control movement spearheaded by the USA, see Bonnie Mass, Population Target : The Political Economy of Population Control in Latin America, (Canada : Charters Pvt. Co., 1976). For an analysis of the social and political forces influencing the Indian Programme, seeD. Banerji, Health & Family Planning Services in India, (New Delhi : Lok Paksh, 1985), pp. 237-245.

This trend of an increasing population growth rate in the developing world is, however, viewed within the Malthusian perspective by the developed nations. In the early 18th century, a cohesive population theory was formulated by T.H. Malthus in his book "An Essay on Population and its Effects on the Future Improvement of Society". According to this theory, poverty was the natural outcome of population growth, since as the power of population to multiply was greater and it would out-strip food supply. He advised the concious checking of population as otherwise natural checks like

Table XI : TRENDS IN WORLD POPULATION 1950-1981

YEAR	POPULATION (MILLION)				
	WORLD TOTAL	MORE DEVELOP-ED REGIONS	% CHANGE	LESS DEVELOP-ED REGIONS	% CHANGE
By half-centuries					
1750 ...	791	201	..	590	..
1800 ...	978	248	23.4	730	23.7
1850 ...	1,262	347	39.9	915	25.3
1900 ...	1,650	573	65.1	1,077	17.7
1950 ...	2,506	857	49.5	1,649	53.1
By decades					
1900 ...	1,650	573	..	1,077	..
1910 ...	1,775	650	13.5	1,125	4.4
1920 ...	1,837	682	4.9	1,155	2.7
1930 ...	2,044	759	11.2	1,285	11.2
1940 ...	2,267	821	8.1	1,446	12.5
1950 ...	2,506	857	4.3	1,649	14.0
1960 ...	2,995	976	13.8	2,019	22.4
1970 ...	3,621	1,084	11.1	2,537	25.6
1980 ...	4,454.2	1,115.3	2.8	3,338.9	31.6

Source : 1750-1970 : United Nations, The Population Debate : Dimensions and Perspectives, (New York : UN, 1975), Vol.1, P.171.
1981 : World Bank, 1983.

as otherwise natural checks like famine, epidemics & diseases would occur to maintain the balance. The developed nations have put forward the theory of the 'population bomb' ticking away in the developing counteries, and have increased aid for population control.

The consequence of accepting this theory has been the neglect of other sectors more crucial to the allievation of misery and poverty. Historical evidence clearly indicates that inspite of heavy investments in population control, fertility has not responded. There is enough data to indicate that without significant reductions in infant mortality rates, without female litracy and participation in jobs outside the household, and without a shift in the structure of production and employment in favour of industry and service, a significant decline in fertility will not be forthcoming. The Gandhigram study (34) conducted in selected villages of Tamil Nadu has shown that higher birth rates correspond with higher infant mortalityrates, and

(34) K.M. Pillai et al, 'Caste, Status & Fertility in Rural Areas of Tamil Nadu', Bulletin of Gandhigram Institute of Rural Health & Family Planning, Vol. VII, No.1, 1972.

that the birth rates and infant mortality rates are considerably lower among the high socio-economic status groups. In turn, indicators of socio-economic status such as education, income, occupation and caste have been found to be significantly related to infant mortality rates in rural and urban areas. (35)

Integrated development, aimed at ameliorating conditions of poverty, inequality and ignorance, needs to be emphasised, (36) and this perspective must be applied within the context of the existing socio-economic realities. In India, as in most other developing countries with large agricultural economies, the persistence of high fertility is a function of the structure of economic production. The nature of the production process and the prevailing poverty (low incomes) make it expedient for the household to have a large family in order to maximise different sources of income, and especially so, when most of these opportunities coincide in a particular season, i.e. monsoon months in India. (37)

Under these conditions children are highly cost-effective. The cost of their up-bringing is far less than the benefits accruing from their numbers. They are the sole source of security in old-age in a country where there is no social security for the poor. Children contribute substantially to the household economy through their labour in the fields, out-door activities such as fetching water, fire-wood etc. and household maintainance work including baby-sitting, cleaning and so on (38).

Integrated development must not overlook these economic realities. Population and health issues become meaningless when the lowest four deciles of the population do not have adequate resources to survive. Furthermore, when family planning activities are assigned to health functionaries on a target basis, the health component of primary health care gets submerged and people develop a distrust towards these workers. (39)

---

(35) S.N. Singh et al "OnInfant Mortality", Indian Census Centenary Seminar, 23-29 October, 1972, Paper III (New Delhi : Registrar General of India, 1972).

(36) ICSSR/ICMR, Health for All (Pune : Indian Institute of Education, 1981).

(37) R. Chaudhary, Social Aspects of Fertility, (New Delhi : Vikas Publishers, 1982).

(38) J. Caldwell, 'The Economic Rationality of High Fertility', Population Studies, 31(1), 1977

(39) See the chapter on Health of Women & Children, Section on Maternal & Child Health, in this volume.

VIII

HEALTH OF WOMEN AND CHILDREN

1. Introduction 145

2. Health Problems of Indian Women
   a. Sex differentials in mortality and Morbidity 145
      - Unfavourable sex-ratio
      - Maternal mortality
   b. Access to and utilisation of health services 153

3. Health of Children
   a. Infant mortality 153
   b. Child mortality(1-14 years) 157
   c. Causes of morbidity and mortality (0-14 years) 158
      i. Infections
      ii. Immunizeable diseases
      iii. Malnutrition

4. Health Programmes for Women and Children
   a. Maternal and child health services 160
   b. Integrated child development services(ICDS) 164

5. Glossary 166

HEALTH OF WOMEN AND CHILDREN

1. INTRODUCTION

Today there is world-wide recognition of the fact that women as a group, even in the most developed nations, suffer a wide variety of disadvantages. An equally neglected section of the society are children, who like women, lack organised articulation of their problems and needs. In this context, it is necessary to reassess the existing health delivery system in terms of its sensitivity to the situation of these two vulnerable groups. This chapter presents a brief account of some of the health problems faced by women and children in India.

2. HEALTH PROBLEMS OF INDIAN WOMEN

It has been recognised that women face health problems throughout their life-cycle,(1) starting from sex preferences in infancy, discrimination in feeding practices, biological vulnerability during the reproductive period, the effects of repeated pregnancies, to special problems such as nutritional anaemia and maternal mortality. The low social status of Indian women, their marginal presence in the market economy and the male bias at all planning and policy-making levels, are responsible for the grossly inadequate attention paid to women's needs in the strategy for development, and in health planning in particular. This becomes clear from the following discussion.

A. SEX DIFFERENTIALS IN MORTALITY AND MORBIDITY

Unfavourable sex-ratio : The sex-ratio has been falling from decade to decade; it declined from 972 women per 1000 men in 1901 to 930 women to every 1000 men in 1971. The 1981 census shows that the trend is halted although the sex-ratio continues to be unfavourable to women (Table I).

The state-wise ratios show wide variations. Kerala is the only state where women outnumber men - 1032 females per 1000 males (1981). The situation is worst in the case of Uttar Pradesh (885), Haryana (870), Punjab (879), Jammu & Kashmir (892), Assam (901), Nagaland (863), West Bengal (911) and Rajashthan (919), with the ratios being appreciably lower than the national figure.(2)

This imbalance cannot be attributed to the differential patterns of migration, but is probably due to the higher rate of mortalityamong women n in most age groups. In India, unlike in the developed countries, the life expectancy among females has been lower than among males until 1971 (TableI) By 1980 the gap appeared to be closing. However average figures are misleading, and the death rates among female children under 4 years of age are distinctly higher than among male children, in all but four states

---

(1) World Health Organization, Women and Health: Report of the Meeting on Women and Family Health, (Geneva: WHO, November 27-30, 1978).

(2) 1981 Census Figures, GOI, DGHS, CBHI, 1984, Table 1.2.

Table I: SEX-RATIO AND LIFE EXPECTANCY AT BIRTH (CENSUS ESTIMATION)

CENSUS YEAR	SEX-RATIO (FEMALE PER 1000 MALES)	EXPECTATION OF LIFE AT BIRTH (YEARS)	
		MALES	FEMALES
1901	972+	23.63	23.96
1911	964	22.59	23.31
1921	955	19.42	20.91
1931	950+	26.91	26.56
1941	945+	32.09	31.37
1951	946	32.45	31.66
1961	941	41.89	40.55
1971	930	46.40	44.70
1981	933(a)	55.12	54.31(p)

NOTES : + Excludes Pondicherry
(a) Provisional figures
(p) Revised Projection of the Expert Committee on Population Projection.

Source: GOI. DGHS, CBHI Health Statistics of India, 1984, (N. Delhi: MOHFW. 1984), Tables 1.1 + 2.11

(Kerala, Tamil Nadu, Assam and Andhra Pradesh) of the Indian Union (Table II).

Table II: SEX-DIFFERENTIALS IN DEATH RATES (0-4 YEARS) IN SELECTED STATES IN 1980

STATE	DEATH RATES (0-4 YEARS)	
	MALES	FEMALES
Haryana	31.7	42.9
Uttar Pradesh	56.5	66.1
Madhya Pradesh	52.9	59.6
Punjab	23.6	30.0
Himachal Pradesh	22.9	27.3

Source : Registrar general of India, cited in C. Gopalan, "The Mother & Child in India", Economic & Political Weekly, No.4, January 26, 1985, p. 160.

The mortality rate for female infants in rural areas remains significantly higher than those for males (Table III).

Socio-cultural factors such as the deliberate neglect of female children, and to a lesser extent female infanticide, work against the superior biological capacity of the female child to survive. This comparative neglect manifests itself in the biased distribution of food and access to health facilities within the family. A comprehensive health care project initiated by the Christian Medical College, Ludhiana, found that the female child - particularly the second female - in an underprivileged family

Table III: INFANT MORTALITY BY SEX (EXPRESSED AS NUMBER OF DEATHS PER 100 LIVE BIRTHS) - 1978.

AREA	SEX		PERSONS
	MALES	FEMALES	
Rural	130	143	136
Urban	71	71	71
TOTAL	120	131	126

Source : Registrar General of India, Infant & Child Mortality Survey - 1979 (Final Report). In GOI, DGHS, CBHI, 1984, Table 2.6.

contributed substantially to post neo-natal IMR. (3) The degree of discrimination gets heightened during an economic crisis; the incidence of malnutrition among female children was observed to be substantially greater than among their male counterparts in the West Bengal floods of 1978. (4)

Even under conditions of economic advancement, an improvement in the status of women has not been observed; rather, most of the increased advantages have gone to the males. A study in two villages of West Bengal found that while the undernourishment index of the girls remained identical, the increased prosperity from land reforms in the case of one village, significantly improved the nutritional status of the boys. (5) Thus, poverty related factors like diarrhoes and malnourishment have a greater adverse impact on female, than on male, children. Although the decline in the sex ratio appears to have been halted, higher female mortality today extends upto 8 or 9 years of age. "This indicates the prolongation in the period of neglect of girls & proves that a decline in the sex ratio does not necessarily lead to better care of women". (6)

Another disturbing trend with implications for the lop-sided sex ratio, is the use of the amniocentesis test as a tool for detecting the sex of the foetus. The tests, conducted during the 24th week of pregnancy, have resulted in abortions of female foetuses during the second trimester, carrying risks to the health of the women and leading to selective female

---

(3) Cited in UNICEF, An Analysis of the Situation of Children in India, (Draft Report), (New Delhi: UNICEF, 1981).

(4) Jocelyn Kunch and Amartya Sen, "Indian Women: Well Being and Survival", Paper presented at the Workshop on Women and Poverty, Centre for Studies in Social Sciences, Calcutta, March 17-18, 1983.

(5) Amartya Sen and Sunil Sengupta, "Malnutrition of Rural Children and the Sex Bias", Economic and Political Weekly, Nos. 19-21, (Annual Number), 1983.

(6) R.P. Ravindra, The Scarcer Half, Counterfact No.9, ACED Health Feature, (Bombay: Centre for Education & Documentation, January 1986). See also Malini Karkal, "Differentials in Mortality by Sex", Economic & Political Weekly, No.32, August 8, 1987.

foeticide.(7)

Maternal mortality : Unlike in developed countries where male death rates exceed female death rates, in India, death rates of women in the reproductive period exceed those of men of corresponding ages. It is only after the age of 40 years that male death rates overtake female death rates. The increased risks arising from maternity are particularly characteristic of Uttar Pradesh and Madhya Pradesh, while Kerala remains the exception (Table IV).

Table IV: SEX DIFFERENTIALS IN DEATH RATES (15-44) IN SELECTED STATES IN 1980.

STATES		AGE					
		15-19	20-24	25-29	30-34	35-39	40-44
India	M	2.0	2.3	2.2	3.4	4.7	7.2
	F	2.9	3.8	4.0	3.6	4.6	5.5
Uttar Pradesh	M	2.0	2.4	2.4	3.1	4.6	9.3
	F	3.8	6.0	5.9	4.4	6.0	5.1
Madhya Pradesh	M	1.8	2.2	2.2	1.9	3.4	7.6
	F	3.9	4.1	5.0	3.4	6.4	5.6
Kerala	M	1.5	1.2	2.0	3.4	4.5	5.6
	F	0.8	1.2	1.2	2.4	1.9	3.0

Source : Gopalan, 1985, Table 8, p. 162.

Talwalkar (1983) indicates that the maternal mortality rate per 1000 live births in India is 5.0 (8) Corresponding figures for other developing countries are Ecuador (2.10), Kenya (1.90), Tunisia (3.10) (9); for Sweden (1979), USA (1978), and UK (1980) the figures were 1, 10 and 11 per 100,000 live births respectively.(10) The main causes of maternal deaths are anaemia, puerperial sepsis, eclampsia, haemorhage and obstetric shock (11) [Table V (a)].

(7) Ibid; Manisha Gupte, "Battling Sex Determination", FRCH Newsletter, Vol.1, No.1, November-December 1986; Sanjeev Kulkarni, Prenatal Sex Determination Tests and Female Foeticide in Bombay City - A Study, (Bombay : FRCH, 1987)
- R.P. Ravindra, "Struggle against Sex Determination Techniques : Unfinished Battle", Economic & Political Weekly, No.12, March 21, 1987.

(8) V.C. Talwalkar, High Maternal Mortality in India, IXth Annual Meeting, Medico Friend Circle, Anand (Gujarat),January 1983.

(9) UNICEF, Women, Health and Development, A Kit, (Geneva: UNICEF, 1983).

(10) Gopalan, 1985, p.164.

(11) K.Bhaskar Rao, "Social factors in Obstetrics & Gynaecology" Journal of Obstetrics & Gynaecology in India, 21, 3 June 1969; Final Report of Field Study of Control of Anaemia during Pregnancy & Tetanus Neonatorium in a Rural Area of Punjab in India under PL-480 Scheme (Made top ICMR, 1967-69). Both studies cited in N.J. Sethna, Maternal & Child Health Services in India (Calcutta: AIIHPH, 1978), p.71. A Glossary is provided at the end of the Chapter.

Table V (a) : PERCENTAGE DISTRIBUTION OF MATERNAL DEATHS BY CAUSES RELATED TO CHILD BIRTH & PREGNANCY (SELECTED YEARS).

SPECIFIC CAUSE	1978	1980	1982
Abortion	11.0	12.5	10.1
Toxaemia	21.1	12.4	12.5
Anaemia	14.6	15.8	24.4
Bleeding of Pregnancy & Puerperium	18.2	15.8	26.2
Malposition of child leading to death of mother	9.5	13.4	7.2
Puerperial sepsis	12.4	12.4	8.3
Not classifiable	13.1	17.7	11.3
TOTAL	100.0	100.0	100.0
Sample No. of deaths	137	209	168

Source : (i) Survey of Causes of Death (Rural) 1979, A Report, p.32,
(ii) Survey of Causes of Death (Rural), 1982, A Report,p.30.
In GOI, Child in India - A Statistical Profile, (GOI: MOHFW, 1985 (a), Table 2.50).

A set of inter-related factors, both economic and socio-cultural, underlie these health hazards in pregnancy and delivery and are responsible for the above mortality picture.

(i) Early age at marriage and adolescent pregnancies :

In seven decades (1901-1971), the average age at marriage had gone up by just 2 years (from 20.2 to 22.2 years) in the case of males and 4 years (from 13.2 to 17.2 years) in the case of females. (12) In the year 1971, 13.6 per cent of the girls between 10-14 years were reported to be married in the rural areas, and 3.9 per cent in urban areas, in contravention of the Child Marriage Restraint Act. There are distinct regional and class variations. (13) Risks and obstetric complications are particularly high in early pregnancy (under 16 years of age). Toxaemia and preeclampsia are significantly higher among young adolescents than any other group of reproductive age (See Table V(b)). In addition, risks to infants from low birth weight and congenital abnormalities are also more frequent.

Table V(b) indicates the heavy price extracted from poor women by such preventible conditions as puerperial sepsis, anaemias and abortions, and underlines the need for proper antenatal care and paramedical assistance at childbirth to ensure safe delivery. Maternal mortality rate (MMR) is a measurable index of the availability and the use of obstetric care.

(12) S.N. Agarwala, Age at Marriage in India, (New Delhi: Kitab Mahal, 1972

(13) R.P. Goyal, Recent Changes in Mean Age at Marriage in India 1961-1971, (New Delhi: Institute of Economic Growth, 1974); A. D'Souza Children in Creches Day care for the Urban Poor, (New Delhi: International Publishing House, 1979).

Table V (b) : PERCENTAGE OF MATERNAL DEATHS BY AGE GROUP DUE TO CAUSES RELATED TO CHILD BIRTH AND PREGNANCY - 1982 (RURAL)

AGE GROUP	15-24	25-34	35-44
Total No. of deaths (All causes)	56	70	35
Abortion	7.2	10.0	17.1
Toxaemia	23.2	8.6	2.9
Anaemia	19.7	22.8	34.3
Bleeding of pregnancy and puerperium	21.4	31.4	17.1
Malposition of child leading to death of mother	7.1	10.0	2.9
Puerperial sepsis	8.9	8.6	8.6
Not classifiable	12.5	8.6	17.1
TOTAL	100	100	100

Source : Survey of causes of Death (Rural) 1982, A Report, in GOI, MOHFW, 1985 (a), Table 2.51.

(ii) High infant mortality, repeated pregnancies and problems related to pregnancies :

During the prime reproductive age (15-45 years) the average Indian woman becomes pregnant about eight times. She may ultimately be left with only 3-5 children due to the high infant and early childhood mortality. Each surviving infant is generally breast fed upto 2-3 years of age. Thus in the reproductive period, 50-60 per cent of the woman's time has been spent in pregnancy and lactation. (14) The need to produce extra hands to work on the land and at home, the anticipation of premature death of children and the cultural premium on male off-springs as guarantors of social security in old age, have all contributed to repeated pregnancies and the high birth rate.

However, the devaluing of the female sex means that there is no increase in food intake for women in keeping with the requirements during pregnancy and lactation. (15) Nutritional anaemia (16) is one of the major causes of rapid ageing and lowered resistance of young women. Between 60 to 68% of all pregnant women in India are reported to suffer from anaemia. (17) The insufficient intake of food and the iron deficient diets combined with excessive demands on women's energy, makes anaemia a very common problem and a major cause of female mortality in all age-groups [Table V(b)]. The range of anaemia prevalent among urban and rural (13-49 years) women is presented below. The data was obtained from three urban slums and three

(14) Kamala S. Jaya Rao, "Who is Malnourished: Mother or the Woman", In Medico Friend Circle, Health Care, Which Way to Go? Examination of Issues and Alternatives, (Pune" MFC, 1983).

(15) J.P. Naik & Kamala Pradhan, "Nutritional Problems of Women in India: Some Socio-economic Aspects", Proceedings of the Nutrition Society of India (Hyderabad), No.17, 1974.

(16) See also the Chapter on Nutrition in this volume.

(17) "A Profile of Common Diseases in India", Future, 13, Winter 1984-85; "Women : A South Asian Perspective" Future. 17, Winter, 1985-86.

rural areas over 1981-85. (18)

	HAEMOGLOBIN		
	BELOW 8 gms	8-10 gms.	ABOVE 10 gms.
Urban Slum (mean)	13.2%	31.3%	35.5%
Rural areas (mean)	7.3%	27.3%	65.4%

Source : Future, 17 Winter 1985-86, p.54.

Maternal malnutrition and excessive work have an adverse impact on weight gain during pregnancy. A study in Calcutta found that the mean weight gain among under-privileged Bengali Hindu mothers was 5.33 kg (S.D. 1.66 kg. with a range of no gain to 8.6 kg. gain) during the last two trimesters of pregnancy. (19) On an average, a normal woman gains about 12 kg. of weight during pregnancy. (20) A Study from Delhi showed that mothers who had borne more than three children, weighed significantly less than those mothers who had fewer pregnancies. (21) Women with weights of 38 kg. or less during pregnancy, and 42 kg. or less during the last month of pregnancy, as also those with heights less than 145 cms, are described as being 'at risk' during pregnancy. The cumulative result of poverty, undernutrition and neglect which girls in the countryside suffer, is reflected in their poor adult body-size. Combined with the lack of proper care, it leads to high maternal mortality. (22)

A study (23) conducted in Andhra Pradesh in 1972 found that 31 per cent of the respondents had more than seven children. The expecting mother was given only the normal rest as availed by others in the household throughout the period of pregnancy, either because they were not aware of such a requirement, or could not afford the luxury of rest. The majority, 99.6 per cent of the women, attended to household work during 0-9 months without any break, while 65.9% per cent attended to normal manual work. Some 29 percent of the women were given less than two months rest after delievry.

This excessive burden results in over-depletion of the woman's body resources, and is also responsible for the high degree of foetal wastage. (24) Low birth weight and prematurity, major causes of infant mortality, are evidence of the poor nutritional status of women.

(18). "Birth Weight - A major determinant of child survival", Future, 1985-86, pp. 53-56.

(19) Study by Choudhary & Gupta, 1977. Cited in Sethna, 1978, p. 72.

(20) "Maternal Malnutrution : Its effects on foetal Nutrition", ICMR Bulletin, 7, 12, December 1977; Ibid, p.72.

(21) K.B. Das, "Weight gain in pregnancy among underprivileged Bengali-Hindu Women", Indian Journal of Public Health, 20, 1 Jan.-March 1976. Cited in Ibid, p.72.

(22) Gopalan, 1985.

(23) B.C. Muthaia, Child Welfare - Existing Conditions and Parental Attitudes: A purposive Study in Andhra Pradesh, (Hyderabad: National Institute of Community Development, 1972).

(24) WHO, Nutrition in Pregnancy and Lactation, Technical Report Series No.302,(Geneva: WHO, 1965).

COMMUNITY HEALTH CELL
47/1, (First Floor), St. Marks Road,
Bangalore - 560 001.

(iii) Excessive work of long duration

It has been estimated that women perform nearly two-thirds of the working hours, receive one-tenth of the world's income and own less than one-hundredth of the world's property.(25) In India, 14-16 hours or nearly two-thirds of a woman's day is spent in working.(26) A rural field study found the respective energy contribution of men, women and children to be 31 percent, 53 per cent and 16 per cent. (27) Women spend more hours per day on survival-related tasks such as gathering fuel or water, and cooking; the great distances between the home and resource centres, (28) and the primitive technology result in higher calorie expenditure per day in women, yet the pattern of food consumption remains biased towards the male members of the family.(29)

(iv) Abortion :

Induced abortion is probably the most widely used method of fertility regulation. Each year 40-70 per 1000 women in the reproductive age have an abortion. According to the yearbook of the Department of Family Planning and Welfare, the highest percentage of MTP (Medical termination of Pregnancy) cases performed are due to the failure of contraception (annual percentage around 47%). (30) This is a clear case for emphasing the health education aspects of the family planning programmes. The number of deaths per 1000 MTPs conducted is reported to be of the order of 0.14. Studies on maternal mortality and morbidity indicate a high incidence of septic abortions, and indict infection associated with abortion and a history of unsuccessful obstetric interference, as major causes of maternal deaths. (31) (See Table V(a) for percentage deaths due to abortion among all causes of maternal deaths in rural areas). It is difficult to estimate the number of illegal abortions & deaths resulting from these. According to the Parivar Seva Sanstha which runs the Marie Stopes Clinics, about 6.6 lakh, women die every year due to illegal abortions. (32)

---

(25) UNICEF, 1983.

(26) Devaki Jain, Women's Quest for Power: Five Indian Cases, (New Delhi: VIKAS Pub. House, 1979).

(27) Srilatha Batliwala, "Rural Energy Scarcity and Nutrition, A New Perspective", Economic and Political Weekly, No.9, February 27, 1982.

(28) J. Tuli, "The Music of Water" World Health, May-September, 1982.

(29) Batliwala, 1982.

(30) Government of India, Facts and Figures on Family Welfare, (New Delhi: Ministry of Health & Family Welfare, 1983).

(31) C. Bose, An Epidemilogical Study of Health Aspects of Spontaneous & Induced abortion in Married Women, (Ph.D Thesis), Calcutta University, 1977;
- M. Kochar & U. Shrivastava, Maternal Mortality Document on Human Reproductive Family Planning & Population Dynamics (New Delhi: WHO/SEARO, May-June 1977);
- T.A. Choudhary, "Morbidity & Mortality due to Pregnancy & Child birth". In WHO Bibliography on Human Reproduction, Family Planning & Population Dynamics, (New Delhi: SEARO,1 1977).

(32) Times of India, June 3, 1984. Cited in V Balasubrahmanyam, Contraception. As If Women Mattered, (Bombay: Centre for Documentation Education, May 1986), p.36.

B. Access to and Utilisation of Health Services

Data regarding the utilisation of health services by women is extremely limited. The only women-oriented programmes in the health sector are the maternal and child health (MCH) services (see Section 4) and to some extent, family planning. Most nutrition programmes have solely focused on pregnant and lactating women.

Women have less access to health services, not because they are healthier or possess adequate health knonwledge, but because their health is a low priority. (33) An examination of in-and-out-patient records of medical institutions reveals that for every 3 men who avail of these facilities, only one women does so. (34) Women are constrained by the cumbersome and time consuming procedure in hospitals, and the largely male staffing of these facilities. (35) The revised Dais Training Programme and the Community Health Guide (CHG) Scheme, (36) are expected to improve the delivery of basic health services in the rural areas. However most village panchayats have favoured the selection of male members, and not women, to the posts of village health workers; the prevalent sex-segregation prevents the latter from reaching women and children effectively. The Voluntary Health Association of India has suggested that every alternative village be posted with one female health worker to take care of the female population in her own, and that of the male CHG's, village. (37)

3. HEALTH OF CHILDREN

India's child population (below 15 years) has declined from 42 per cent (230 million) of the total population in the early seventies, to 39.7 percent (272 million) in 1981 (census estimates). It is further expected to decline to 31 percent by 1991. However, the implications for programme planning at the microlevel are marginal. Out of these 272 million children some 99 million (55%) of rural, and 19 million (45%) of urban children, i.e. a total of 118 million Indian children, live below the poverty line. (38)

A. Infant Mortality

The Infant Mortality Rate (IMR) which was 160 per 1000 live births in 1947, has shown a consistant decline, both for males and females as well as

---

(33) Padma Prakash,"Women and Health: Health Issues in the context of women's position", National Conference on a Perspective for Women's Liberation Movement in India, (Bombay), November, 1980.

(34) Srilatha Batliwala, Women and Health Care, (Bombay: FRCH, 1981).

(35) Andrea Menefee Singh and Meera Velayudhin, The Integration of women in the Development Process and its Impact on the well-being of children. Report prepared for UNICEF (SCARO), (New Delhi: UNICEF South Central Asia Region, 1979).

(36) See the chapter on Health Organization & Manpower Planning for details of the Dais Training Programme & the CHG scheme.

(37) Voluntary Health Association of India (VHAI), Seminar on the National Health Policy: A Report, (New Delhi: VHAI, April 23, 1983).

(38) Registrar General, 1980 and statement of Planning Minister in Lok Sabha, February 26, 1981. Cited in UNICEF, 1981, pp. 3-4.

for the rural and urban population. However, the rates for females remain significantly higher than those for males, particularly in the rural areas. According to the 1978 figures, while the male infant mortality rate was 120 and the combined rate was 126 per 1000 live births, the female IMR was 131 (Table III). The IMR is reported to have further declined to 114 by 1980. (124 and 65 for rural and urban areas respectively).(39)

According to Gopalan, "The rather precipitous fall from 130 to 114 in just 3 years,... sounds rather intriguing especially (as) this fall in the national average is accounted for by a significant decline in IMR in just 5 states of the Indian Union and that within 2 years (1978 to 1980). But then, these data have inherent limitations and too much significance should not be attached to variations between successive years; the trend over the entire decade may be less misleading".(40)

There is a clear-cut high infant mortality belt running across the northern states of Uttar Pradesh, Gujarat, Madhya Pradesh, Orissa and Rajasthan. Kerala is the exception with an IMR of 40 per 1000 in 1980 (Table VI).(41)

Infant mortality is broken into three components: peri-natal mortality (deaths between 0-7 days after birth), neo-natal mortality (within 4 weeks after birth) and post natal mortality (between 1-12 months after birth). Prematurity, low birth weight and still births resulting from maternal malnutrition and lack of ante-natal care are the major peri-natal killers. Some 20 percent of total infant mortality in rural areas is due to prematurity.(42) Neo-natal tetanus (responsible for 15.2 per cent infant deaths), acute respiratory infections, particularly pheumonia, gastroenteritis and diarrhoea of the new born, are important causes of neo-natal deaths.(43) In 1978 neo-natal deaths accounted for 56 per cent of the total infant deaths in the rural areas, and 60 percent in urban areas.(44) Anaemia and infections, such as diarrhoea, gastro-enteritis, typhoid, broncho-pheumonia, malaria and influenza, are the main causes of morbidity and mortality in the post-natal period. Table (VII).(45)

---

(39) GOI, DGHS, CBHI, 1984, Table 2.4.

(40) Gopalan, 1985, p 159.

(41) V.S. Swamy, "Some aspects of Child Mortality - a Profile", Paper presented at the IASP Conference on Population Dynamics and Rural Development, December 28-30, 1979 (Mimeographed).

(42) M. Dutta and P.N. Kapoor, "Trends and Differentials in Infant Mortality in India: 1950-1978", Paper presented at Joint WHO/ESCAP Meeting on Mortality in South & East Asia - A Review of Changing Trends & Patterns, 1950-75, Manila 1-5 December, 1980.

43) Ibid; Government of India, Office of the Registrar General, Report on the Survey of Infant and Child Mortality, 1978 (Maharashtra, Orissa., Uttar Pradesh, Rajashthan & Tamil Nadu), (New Delhi: Ministry of Home Affairs, 1979); Government of India, Office of the Registrar General, Survey of Causes of Death (Rural). Data for 1979, 1980 and 1981, given in GOI, MOHFW,1985(a), Table 2.49.

(44) Dutt and Kapoor, 1980, p. 223.

(45) GOI, Registrar General of India, 1979; GOI, MOHFW, 1985(a), Table 2.49.

Table VI: INFANT MORTALITY RATES (SRS) IN SELECTED STATES 1978, 1980, 1981.

INDIA/state		1978	1980	1981
India	C	126	114	110
	R	136	124	119
	U	71	65	62
Uttar Pradesh	C	167	159	130
	R	172	167	157
	U	110	99	97
Madhya Pradesh	C	135	142	142
	R	141	152	152
	U	86	80	80
Rajasthan	C	129	105	108
	R	139	115	118
	U	65	50	53
Orissa	C	133	143	135
	R	137	150	140
	U	80	62	68
Gujarat	C	118	113	116
	R	127	119	123
	U	88	94	89
Punjab	C	103	89	81
	R	111	96	88
	U	65	58	51
Kerala	C	39	40	37
	R	42	41	40
	U	26	34	24

C: Combined; R: Rural; U: Urban

Source : GOI, MOHFW, 1985 (a), Table 2.31.

Table VII: INFANT MORTALITY INDICES (SRS) IN INDIA (1978 and 1980)

YEAR	STILL BIRTH RATE		PERI-NATAL MORTALITY RATE		NEO-NATAL MORTALITY RATE		POST-NATAL MORTALITY RATE		INFANT MORTALITY MORTALITY RATE	
	R	U	R	U	R	U	R	U	R	U
1978	16.0	10.3	67.9	33.5	85.0	38.0	52.0	36.0	137.0	74.0
1980	12.0	7.9	59.8	35.3	75.5	39.1	48.3	26.1	123.8	65.2

Source: 1978 : GOI, MOHFW, 1985 (a), Table 2.35
1980 : GOI, DGHS, CBHI, 1984, Table 2.7.

Table VIII: SELECTED INDICATORS OF INFANT MORTALITY BY SOCIO-ECONOMIC LEVELS (1978) - ALL INDIA

	RURAL	URBAN
1. Education Level of Women		
Illiterate	145	88
Literate but below Primary	101	57
Primary and above	71	47
Literates	90	50
2. Occupation of women		
Agriculture, fishing and related activities	143	106
Production and transport labourers and related activities	150	129
Workers	142	98
Non-workers	134	64
3. Age at marriage of women		
Below 18 years	156	88
18 - 20 years	132	67
21 years and above	90	46

Presence of Basic Amenities	RURAL		URBAN	
	WITH	WITHOUT	WITH	WITHOUT
Water supply	108	134	66	94
Motorable road	110	139	62	82
Bus stand	105	138	51	73
Railway station	56	131	65	69
Primary school	126	145	65	71
Medical facilities	102	136	57	79

Source: Registrar General of India, Survey of infant and child mortality 1979. In GOI, DGHS, CBHI, 1984, Table 2.6.

There is a direct link between infant mortality rates and the socio-economic status of the woman and child (Table VIII). Infant mortality shows a stong correlation with the level of education of the mothers, and educational level is itself an index of the overall socio-economic status of the woman concerned. The overall female litracy in India is only 24.82

percent (1981) as against 46.89 percent male litracy.(46) Even without analysing each of the variables in depth, one can state that IMR is a function of maternal health and environmental sanitation, interacting with nutrition levels of the child.

B. Child Mortality (1-14 years)

The child mortality rates have come down marginally since 1970. However, deaths of children under 5 years of age in 1980 continued to account for nearly 46 per cent of all deaths. The difference between life expectancy at birth and at five years is a reflection of child mortality. Unlike in developed countries with low child mortality where life expectancy at 5 years is less than that at birth, in India the position is reversed (from 55.1 years and 54.3 years for males and females respectively at birth, to 60.1 years and 61.8 years respectively at 5 years). (47) (Table IX). The

Table IX: AGE-SEX SPECIFIC DEATH RATES IN CHILDHOOD (0-14 YEARS) (ALL INDIA, 1978)

AGE-GROUP	RURAL			URBAN			COMBINED		
	MALES	FEMALES	PERSONS	MALES	FEMALES	PERSONS	MALES	FEMALES	PERSONS
0-4	48.9	57.9	53.2	25.5	27.2	26.3	44.7	52.1	48.3
5-9	4.2	5.5	4.8	1.5	1.5	1.5	3.7	4.7	4.2
10-14	2.1	2.2	2.2	0.9	1.1	1.0	2.0	2.0	2.0

Source: Registrar General, India, Sample Registration System. In GOI, DGHS, CBHI, 1984, Table 2.8.

three broad factors responsible for child mortality in India are infections, communicable diseases and undernourishment, and their synergestic effect (Table X). Much of the mortality is due, not so much to the diseases per

Table X: CAUSES OF CHILD (1-14 YEARS) DEATHS : ALL INDIA - MODEL REGISTRATION SCHEME, 1974

CAUSES OF DEATH	PERCENTAGE
Respiratory disorders	23.2
Fevers	25.3
Other clear symptoms	12.0
Digestive disorders	21.8
Circulatory disorders	3.9
Central Nervous System disorders	2.2
Accidents and injuries	2.3
Unclassified	9.3
Percentage of total deaths	10.4

Source: NIPCCD, Country Report on Child Development in India, Implications for Policy and Training, 1980. Cited in UNICEF, 1981, p.38.

(46) GOI, DGHS, CBHI, 1984, Table 3.3.

(47) Gopalan, 1985, pp. 159-160.

se, but to the fact that they occur in children debilitated by malnourishment and parasitic infestations. Home accidents and poisoning also contribute heavily to mortality and morbidity in this age group.(48)

C. Causes of Morbidity and Mortality (0-14 years)

(i) Infections: This category includes acute respiratory infections and gastro-intestinal disorders with dehydration. The fatality rate from respiratory infections is 10.16 per cent. Upto 40 percent of outdoor, & 35 per cent of indoor, patients are children below five years.(49)

Diarrhoel Diseases

The single major cause of mortality among children below the age of 5 years, is dehydration caused by diarrhoeal infections. An estimated 1.5 million children under 5 years die of it annually.(50) The survey of infant and child mortality in India cited diarrhoeal diseases as the cause of death for 1343 infants, of which 389 deaths were among 2 year olds and 279 deaths were among 3 year olds, per 10,000 rural children of the respective ages.

The high incidence of the disease is mainly due to polluted water supply, poor environmental sanitation, contamination of food, overcrowding and malnutrition. It is estimated that nearly 163 million children (0-14 years) in rural India do not have access to safe drinking water. In this context, schemes for protected water supply and sanitation are of considerable importance, and the Government has endorsed the UN declaration of the 1980-90 decade as the International Drinking Water Supply and Sanitation Decade.(51) The strategy of oral rehydration therapy (ORT) consisting of a simple solution of sugar, salt and water which is administered orally to counteract the dehydrative effect, has been found effective. Oral rehydration packets are supplied to patients in rural areas through multipurpose workers.

(ii) Immunizeable Diseases : Infectious diseases are major causes of sickness and death among Indian children. They are also preventible by immunization. The Expanded Programme on Immunization (EPI) of the WHO, was launched in January 1978 in the wake of eradication of small-pox. Its objective is to reduce morbidity and mortality from diphtheria, pertusis, tetanus, poliomyelitis, tuberculosis and measles. EPI is a long term, on-going programme for children, and is being implemented through the PHCs and sub-centres in rural areas, and hospitals and Maternal and Child Health Centres in urban areas. The integration of immunization services, expansion of vaccination coverage, addition of new vaccines where necessary, development of a 'cold chain' of supply to ensure that vaccines are stored under refrigeration till the point of use, surveillance of the target diseases, coordination of production and supply of vaccines, training of health personnel, preparation of health education materialand evaluation

---

(48) Sethna, 1978, pp. 73-74.

(49) "A Profile of Common Diseases in India", Future, 13, Winter 1984-85, p.43.

(50) Ibid, p.43.

(51) See the chapter on Environment & Health in this Volume.

are the major components.(52)

Despite the EPI, the level of immunization coverage of mothers and children has been low (Table XI). The available data indicates that every disease against which effective vaccines are available, is widespread in the country.

Table XI: IMMUNIZATION STATUS OF MOTHERS AND CHILDREN IN INDIA (1980-81)

INDEX		PRESENT LEVEL (% AGE COVERAGE)
1. Immunisation status :		
TT (for pregnant women)		20
TT (for school-going children)	10 years	-
	16 years	-
DPT (Infants)		25
Polio (Infants)		5
BCG (Infants)		65
DT (New entrants of school 5-6 years)		20
Anti-typhoid (New entrants of school 5-6 years)		2
2. Vitamin A Prophylaxis		25
3. Nutritional supplement :		*
a) Expectant mother (iron & folic acid)		25-30
b) Children upto 12 years		10

DT - Diphtheria, Tetanus; TT - Tetanus Toxoid;
DPT - Diphtheria, Pertussis, Tetanus.
* 1978-79.
Source: GOI, Health for all by 2000 AD, (N. Delhi: MOHFW, 1981), cited in Banerji, 1985, p.287.

Diphtheria : The reported incidence between 1975 to 1981 was an average of 25,000 cases per year.(53)

Pertusis (Whooping Cough) : Around 300,000 cases are reported annually.(54)

Tetanus : The estimated infant mortality rate from tetanus is 13.3 per 1000 live births in the rural areas, and 3.2 per 1000 in urban areas. In 1981, nearly a quarter million infants died in the first month of life.(55) Neo-natal Tetanus (NNT) Rate is the highest for Uttar Pradesh; tetanus alone was responsible for 33.6 percent of all infant deaths in rural Uttar Pradesh in 1979.(56)

(52) Government of India, Annual Report 1984-85, (New Delhi: Ministry of Health & Family Welfare, 1985(b), p.30; T. Jacob John, "Issues in Immunization" Future, 17 Winter 1985-86, pp. 39-42.

(53) Future, 1984-85, p.43.

(54) Ibid, p.43.

(55) Ibid, p.43.

(56) GOI, Office of the Registrar General of India, Report of the Survey of Infant and Child Mortality 1979, (New Delhi, Ministry of Home Affairs, 1979), p.76.

Poliomyelitis : is an acute viral illness causing 'infantile paralysis'. An estimated 141,000 to 234,000 cases occur every year. The annual incidence rate is around 1.5 to 1.8 per 1000 children in the age group of 0-4 years.(57)

Measles : The fatality rate from this highly contagious disease is 1 to 3 per cent (58) and it is particularly hazardous for malnourished children. Yet one dose of the live vaccine can give 95 per cent immunization for at least 15 years.

Tuberculosis : Some 500,000 deaths occur annually from tuberculosis, most of them in children below 15 years. The incidence of infection is 0-8 percent in the 0-4 years age group, 1.1 percent in the 5-9 years age group and two percent in the 10-14 years age-group.(59)

Typhoid : While a large number of cases go unreported, some 300,000 cases are reported annually, the majority among school children.(60)

The major stumbling blocks to successful immunization programmes are not medical, but derive from practical difficulties or operational problems, such as the distribution network for vaccines. Record maintenance by authorities also suffer from various lacunae.

(iii) Malnutrition : (61)

According to the UNICEF report, (62) three-fourth of children (0-6 years) have body weights below 75 percent of standard weight of well-nourished children, 52 percent suffer from moderate malnutrition and 23 per cent from severe malnutrition.

An estimated 60 per cent Indian children (0-6 years) suffer from nutritional anaemia and protein-calorie malnutrition in one form or another.

4. HEALTH PROGRAMMES FOR WOMEN AND CHILDREN

A. Maternal & Child Health Services

Maternal & Child Health services were one of the earliest priorities, and components, of the new health services organization in Independent India. The enormous dimensions of the health problems of mothers and

---

(57) Future, 1984-85, p.43.

(58) Ibid. p.43.

(59) Ibid, p.43.

(60) Ibid, p.43.

(61) For a detailed account of malnutrition in India, see the chapter on Nutrition. The details of the various nutrition programmes have also been discussed. See Table II for the Percentage Distribution of 1-5 years Children according to the Gomez Classification (1979-80).

(62) UNICEF, 1981.

children had been highlighted in the pre-1947 studies on maternal and infant mortality rates and causes. (63) The low level of health among these two vulnerable groups, the high percentage of deaths due to preventible factors and the urgent need for state intervention, were discaused both in these studies and in the reports of the Sokhey (64) and Bhore Committees. (65)

According to the Bhore Committee report, nearly one half of the total deaths at all ages in British India took place among children under 10 years. Of these, nearly a half were among infants under one year, and 45 to 50 per cent of all infant deaths occurred during the neo-natal period. The report put forward the conservative estimate of 200,000 annual deaths among women in the reproductive ages from causes associated with pregnancy and child bearing, and some four million cases of maternal morbidity from the same causes. The committee recommended that mother and child welfare services form an integral part of the general health services, providing a continuous pattern of care for antenatal, parturient and post natal mothers and their children. The services envisaged included early contact of ante-natal mothers, follow-up throughout pregnancy, attention to hygiene and diet during pregnancy and provision of safe delivery service, as also instruction on birth control. For the child, attention was to be paid to growth, development, nutrition and immunization and the maintenance of weekly weight record. (66)

MCH Services in Health Planning : Between 1947 and the launching of the First Five Year Plan, the emphasis was on the expansion of paediatric services, the strengthening of Maternal and Child Welfare (MCW) centres through WHO and UNICEF assistance and the creation of administrative positions in MCW in all the states. The non-availability of trained personnel, the concentration of MCW centres in urban areas and the heavy load of maternity work to the detriment of the child care programme at these centres were perceived to be the major problems for the delivery of MCH services. (67)

There was an overall increase in the health services for infants and children in the First Plan period, when MCH services were integrated into the overall health services to be delivered by primary health centres. When the latter were first established in 1952, their MCH activities were the

---

(63) S. Pandit, Summary of the Findings of Investigation into the Causes of Maternal Mortality in India, Special Report IRFA No.17, (New Delhi: Indian Red Cross Society, 1948); L. Ghosh & C. Chandrasekhar, Inquiry into the Vital Loss upto One Year of Life as recorded by seven maternity and child welfare centres in Calcutta, (Calcutta: AIIHPH, 1942); J.M. Orkney, "The Health of Indian Women & Children", Journal of the Association of Medical Women of India. XXXII, 1, February 1944; "Maternity & Child Welfare Work: its aims and organization in India and possible development", Trans. Womens Medical Service Conference, 16-21 December, 1940 (New Delhi).

(64) National Planning Committee, Sub-committee on National Health (Sokhey Committee), Report (Bombay: Vora, 1948).

(65) Government of India, Health Survey and Development Committee (Bhore Committee), Report (New Delhi: Manager of Publications, 1946).

(66) For a detailed summary of MCH services in India, see Sethna, 1978.

(67) Ibid, pp. 1345.

only ones with the potential to reach out to the wider population. One auxiliary nurse midwife (ANM) at the PHC, three ANMs at the three sub-centres each covering a population of 20,000 respectively, and one Lady Health Visitor (LHV)/Public Health Nurse (PHN) giving supervisory support to the ANMS, provided MCH services to the rural areas. The only other health worker at the PHC, the sanitary Inspector, was responsible for the entire public health activities in the are covered by the PHC. The grossly inadequate PHC staff could barely cope with the maternity load (one ANM per 800 births annually in 40 villages). In comparison, the short term programme envisaged by the Bhore Committee was one PHC per 20,000 population, with a staff pattern of one woman doctor, four public health nurses, four midwives, and four trained dais. Two out of the four beds at the PHC were earmarked for maternity cases, and six beds in a 30 - bed hospital here to serve as the referral unit for four PHCs. (68)

In the Fourth Plan (1969-74), a Point four programme for the MCH component was adopted by all the States: (69)

(a) supply of iron and folifer tablets to ante-natal mothers and children,

(b) administeration of vitamin A in oil to children between one and six years of age at six-monthly intervals,

(c) immunization against diphtheria, tetanus and whooping cough to be extended to all children in rural areas, and

d) administration of tetanus toxoid to all pregnant mothers to prevent tetanus neonatorium. This was redesignated the Point Five programme in the Fifth plan with the inclusion of immunization of school children against diphtheria and tetanus. (70) The Minimum Needs Programme (MNP), the scheme for training multi-purpose health auxiliaries, the Community Health Workers (CHW) Scheme and the Dais Training Programme, which were introduced in the Fifth Plan period (or strengthened as in the case of the Dais Training Programme), all aim at providing integrated health, family planning and nutrition services, and extending the coverage of the health delivery system. In 1978, some 32 years after the Bhore Committee report was submitted, the Joint Conference of Central Councils of Health and Family Welfare (71) admitted that maternal, perinatal, infant and childhood deaths in India continued to be very high and were largely due to preventive factors.

The policy statement of the Janata Government emphasized the promotion of all aspectsof family welfare, and in that context the Joint Conference, adopted the following measures for improving MCH services: (72)

---

(68) Ibid, p.10-11.

(69) Government of India, Planning Commission, Fourth Five Year Plan 1969-74, (New Delhi: Planning Commission, 1969).

(70) Government of India, Planning Commission, Fifth Five Year Plan 1974-79, (New Delhi: Planning Commission, 1974),

(71) Government of India, Proceedings of the Fourth Joint Conference of Central Council of Health and Central Family Welfare Council, (New Delhi: Ministry of Health & Family Welfare, 28-31 January, 1978).

(72) Sethna, 1978, pp.48-51.

a) Screening of mothers and children at risk;
b) Prophylactic immunization of ante-natal mothers with tetanus toxoid, immunization of children with DPT and poliomyelitis vaccines, administration of vitamin A in oil to children, administration of folifer tablets;
c) Training of indigenous dais;
d) Establishment of referral services for mothers and children;
e) Quantification of MCH care objectives for PHC and sub-centre level staff;
f) Continuing education and refresher training for ANMs and LHVs to acquaint them with newer approaches to problems, eg. Oral Rehydration Therapy (ORT) for the management of diarrhoeal diseases & the changes in government policy.
g) Adequate supply of essential drugs and diet supplements to health auxiliaries;
h) Adequate supervision and support for MCH workers.

MCH & Family Planning : MCH services, despite the detailed planning and the expansion of infrastructure and trained personnel, have had little impact on the health of women and children as demonstrated by the continuing high maternal, infant and child mortality and morbidity levels in India. Apart from the problems in implementation high lighted by committees and evaluation studies, the subordination of MCH activities to family planning from 1966 onwards is largely responsible for the poor impact. Instead of family planning work being one component of comprehensive MCH services, MCH work became a method of gaining acceptors for family planning.

The pressure on ANMs to fulfill FP targets is linked to the threat of penalities for non-performance; the absence of concrete targets for MCH work resulted in the neglect of MCH activities in rural areas. The approach and effort of health auxiliaries were geared towards gaining acceptors for various contraceptives. According to a recent study, one major reason for the non-utilisation of PHC services by the rural population was the association of the latter with the family planning programme. Women preferred the services of a traditional 'dais', as the trained ANM used the post-partum period to complete targets. The under-utilization of immunization camps was due to their being used to gain acceptors among young mothers for Copper T insertions. (73) In 1980, the Village Health Guide Scheme was transferred from Health to Family Planning. It forms part of the family welfare budget, and is administered by a Department primarily interested in fulfilling sterilization targets. (74)

The administration of MCH services was transferred in 1966 from the Director General of Health Services to the newly created Department of Family Welfare within the Ministry of Health, and to the State Family Welfare Bureau. According to the Fourth Joint Conference (1978), support to, and supervision of, MCH work in the States and Districts has suffered because MCH activity is only one among many responsibilities of the District Health and Family Welfare Officer. (75)

---

(73) A. Jesani, M. Gupte & R. Duggal, NGOs in Rural Health Care, Volume II, (Bombay: The Foundation for Research in Community Health, forthcoming).

(74) Ashish Bose, "The Allocation of Health Care Resources in India. Health for Whom?", Paper presented at the Conference on the Allocation of Health Care Resources in India, Columbia University, New York, April 14-16, 1986, p.33.

(75) Cited in Sethna, 1978, p. 50-51.

Present Position : A number of programmes undertaken by the government have implications for MCH work. These include the Expanded Programme on Immunization (EPI), the Oral Rehydration Therapy programme for control of diarrhoeal diseases, National Programme for the Control of Blindness, Area Development Projects and other components of the Family Planning programmes and the Integrated Child Development Services (ICDS) Scheme. The delivery of MCH services is made through the PHCs, family welfare centres and sub-centres in the rural areas, and the family welfare centres and post partum centres in urban areas.

The package of services includes :

a) Ante-natal, partum and post-natal care;
b) Prophylaxis against nutritional anaemia among mothers and children through administration of iron and folic acid supplements;
c) Prophylaxis against blindness due to Vitamin 'A' deficiency among children (1-5 years) through administration of concentrated vitamin 'A' solution in oil form;
d) Expanded Programme of Immunization covering pregnant women;
e) Health education.(76)

B. Integrated Child Development Services (ICDS) Programme : The ICDS programme (77) has been evolved to focus attention on children and mothers, and is a joint effort involving the Governement of India, various state governments, and UNICEF. Other international and bilateral agencies such as the WEF, CARE, NORAD, USAID, provide varying degrees of assistance. The objectives of the programme are,

a) to reduce the incidence of low birth weight and severe malnutrition among children;
b) to reduce mortality and morbidity rates among the 0-6 years age group;
c) to reduce school drop-out rates through early stimulation programmes for 3-6 years old children;
d) to provide environmental conditions necessary for the mental, physical and social development of children;
e) to enhance the ability of mothers to provide proper care for their children;
f) to achieve effective co-ordination at the policy and implementation levels among government departments to promote child development.

To achieve these goals, ICDS provides a package of services that includes, (1) supplementary nutrition; (2) immunization; (3) health check-up; (4) referral services; (5) nutrition and health education; (6) non-formal education for women. The Anganwadi, with an Anganwadi Worker in each village, is the centre for the delivery of services.

Each Rural Project (non-tribal) covers 100 villages with a population of 100,000, of which 17 per cent would be below 6 years old, and 20 per cent women in the 15-44 years age group. An Urban Project (covering slums/wards) usually has the same characteristic. A tribal project covers about 50 villages and a population of 35,000. Each project is headed by a Child Development Project Officer. ICDS funds also strengthen the functioning of

---

(76) GOI, MOHFW, 1985 (6).

(77) Also see the Chapter on Nutrition in this Volume.

PHCs in project areas through the addition of posts of a medical officer, two lady health visitors/public health nurses and ten ANMs. (78)

Evaluation of ICDS : The Programme Evaluation Organization (PEO) of the Planning Commission (79) carried out an assessment in two phases, covering a baseline survey and a recheck in 1976 & 1977-78. It made the following comments :

(1) The baseline survey was not systematic so that the exact size and characteristics of the target group was not known, resulting in inadequate supply of inputs.
(2) The least vulnerable child group (3-5 + years) was receiving the most attention; the traditional feed-on-site approach had limited capacity to reach the younger and most nutritionally vulnerable age-segments (0-1 and 1.3 years).
(3) The composition of the co-ordination committees was predominantly official and male-dominated.
(4) The Anganwadi workers were not health oriented; the concept of delivery of a package of services was not properly understood.

A later evaluation study (1982) (80) however found significant improvements. The defect in the programme highlighted by this study was the low attendance in the functional literacy classes for women. The Biostatics Division and Human Nutrition Unit of the AIIMS also reported a positive impact on the beneficiary population after 20-21 months of utilisation of the ICDS package (81)

On the other hand, the National Institute of Public Co-operation and Child Development (NIPCCD) (82) drew attention to the unsatisfactory staff position in many projects, the lack of co-ordinated approach between health and non-health staff, the poor performance of the functional literacy component and the irregularity of the supplementary nutrition programme.

---

(78) Government of India, Integrated Child Development Services Scheme, (New Delhi : Ministry of Education and Social Welfare, 1978) pp. 1-31.

(79) Government of India, Report on the State of Preparedness of the ICDS Projects, (New Delhi: Planning Commission, Programme Evaluation Organization, 1976).

(80) K.G. Krishnamurthy and M.V. Nadkarni, Integated Child Development Services : An Assessment, (New Delhi: UNICEF, 1983).

(81) B.M. Tandon, Integrated Child Development Services in India, (New Delhi: AIIMS, 1980).

(82) Government of India, A Report on ICDS workshops for BDOs, CDPOs, MOs Organised at Gauhati, Tirupati and Udaipur, (New Delhi: NIPCCD, January-February 1978).

GLOSSARY

(1) Eclampsia	Refers to pre-eclampsia in pregnancy complicated with convulsions. Early diagnosis of pre-eclampsia by good ante-natal care & early treatment can help to prevent the incidence of eclampsia.
(2) Obstetric Shock	Collapse of circulation & a critical reduction in blood supply after the delivery.
(3) Post-partum haemorhage	Excessive bleeding from the genital tract at any time after the birth of the baby upto the end of 6 weeks (puerperium period). Careful ante-natal care, treatement of anaemia in pregnancy & proper conduct of labour are some of the important preventive measures.
(4) Pre-eclampsia	A syndrome specific to late pregnancy (after 20 weeks). It is characterised by persistent high blood pressure at above 140/90 mm Hg. and oedema or proteinuria or both. The development of pre-eclampsia can be checked by careful antenatal supervision, adequate rest & proper salt restricted diet.
(5) Puerperial sepsis	An acute infectious complication occuring within four weeks of childbirth or abortion, & characterized by fever, malaise & foul smelling, abnormally prolonged lochia. The asceptic technique for conducting delivery, other obstetrical procedures & general measures for the prevention of cross-infection consitute prophylaxis against this condition.
(6) Toxaemia of Pregnancy	Comprises a syndrome of hypertensive disorders, including pre-eclompsia & eclampsia.

****

IX

NUTRITION

1. Introduction 167

2. Undernutrition and Protein-Calorie Malnutrition 168
   - The protein gap theory
   - Magnitude of the problem: measurement and classification of protein calorie malnutrition (PCM)
   - Controversy regarding the extent of PCM in India
   - The real reasons for hunger
     i. Skewed distribution of land, inputs and income
     ii. Agro-economics of nutrition
     iii. Illitracy, morbidity and mortality

3. Vitamin and other Micro-Nutrient Deficiencies 175
   - Vitamin A deficiency
   - Deficiencies of B complex vitamins
   - Iron deficiency anaemia
   - Goitre
   - Lathyrism
   - Nutrition and maternal health

4. A. Attempts to Remedy the Situation 178
   - School Mid-day Meal Programme(MDM)
   - Applied Nutrition Programme(AMP)
   - Special Nutrition Programme(SNP)
   - Integrated Child Development Services(ICDS) Scheme

   B. Programmes for Specific Deficiency Diseases 180
   - Vitamin A Deficiency Prevention Programme
   - Prophylaxis against nutritional anaemia
   - National Goitre Control Programme
   - Food fortification programmes

NUTRITION

1. INTRODUCTION

The body needs energy for the maintenance of body temperature, for metabolic purposes, for supporting growth and for physical activity. The energy value of foods is expressed in terms of kilo calories. The K cal or calories is the heat required to raise the temperature of 1kg of water by $1^{o}C$ (1). Calorie allowances are recommended according to age, sex, physical activity, altered pshysiological status (pregnancy and lactation) and environment, in order to ensure enough energy for the above functions. Allowances for vitamins and essential nutrients are similarly arrived at, i.e. by determining the average requirement.

At the International level, the Expert Group of the FAO/WHO has formulated standards in respect of calorie allowances. Recommended standards for the Indian conditions were set out by the Nutrition Expert Group of the Indian Council of Medical Research (ICMR) in 1968. (2) The ICMR updated, in 1981, its recommendations on dietary allowances of calories and nutrients, in accordance with the revised guidelines of the FAO/WHO and the results of various studies carried out in India. (3) Its scales are based on the average needs of individuals in specific groups, namely infants (upto 1 year of age), children, adults, pregnant and lactating women. Since body weight, daily activity and age influence energy needs in adults, recommended allowances are suggested for a Reference Man (RM) and Reference Woman (RW) in the age group 20-40 years of age (Table I).

Table I : ENERGY ALLOWANCE FOR ADULTS

CATEGORY	REFERENCE BODY WEIGHT (Kg.)	ACTIVITY	ENERGY ALLOWANCE (K Cal)
Man	55	Light	2400
		Moderate	2800
		Heavy	3900
Woman	45	Light	1900
		Moderate	2200
		Heavy	3000

Source : ICMR, 1981, Table 2.1, p.4.

Nutritional disorders comprise three forms: undernutrition, overnutrition and malnutrition. Undernutrition and malnutrition are major problems in India. This chapter presents an account of the nature and

(1) J.E. Park, Text book of Preventive and Social Medicine, 4th Edition, (Jabalpur : Shri. Banarsidas Bhanot, 1974), p.135.

(2) Ibid, pp. 136-137. Standards for calorie allowances for Indians were first formulated in 1944, and were subsequently revised in 1955.

(3) Indian Council of Medical Research, Recommended Dietary Intakes for Indians, (New Delhi ICMR, 1981). See also "Energy Requirements and Recommended Allowances ", Nutrition News, Vol.3, No.4, July 1982.

extent of these disorders, their causes, and the programmes devised by the government to tackle them.

2. UNDERNUTRITION AND PROTEIN-CALORIE MALNUTRITION

Undernutrition is the inadequacy of kilocalories in the diet, while malnutrition denotes clinical deficiency arising from the lack of one or more nutrients (4). The two are closely related in the Indian context, as discussed below.

The 'Protein-Gap' Theory:

In the late 60s, protein malnutrition was seen as the major problem in poor Third World Countries. The United Nations published areport, (5) in 1967, on the crisis of the 'protein gap' in these countries; it estimated that one-third of the children in developing societies were protein malnourished and likely to be suffering from permanent brain damage (6)

Later studies, however, could provide no objective evidence for the insufficiency of protein in the Indian diet. The problem instead was the inadequate intake of calories, below the minimum required to meet energy needs. "It was realised that protein synthesis is very expensive in terms of calories; unless the calorie needs are met, protein malnutrition cannot be avoided". (7) This problem is known as protein-calorie malnutrition (PCM); it is the most widespread and generalised form of malnutrition in India, mainly concentrated among the poorer socio-economic sections of the population.

Magnitude of the problem: Measurement and Classification of Protein Calorie Malnutrition (PCM)

Various methods are used in assessing the nutritional status of a community, and in distinguishing the population with normal status from that suffering from undernutrition. Anthropometric measurements are one of the most important and commonly used tools. The basic measures are -

(i) height and weight - weight for age and height for age are indicators of the duration of malnutrition, while weight for height is an index of the current nutritional status;

(ii) arm circumference - it is an index of protein energy deficiency in early childhood; and

(iii) skinfold thickness - is a means to evaluate the reserve of caloriese in the body.

---

(4) P.V. Sukhatme, "Improving Living Conditions in Villages- Interviews with the Press", in P.V. Sukhatme (ed), Newer Concepts in Nutrition and their Implications for Policy, (Pune: Maharashtra Association for the Cultivation of Science, 1982).

(5) United Nations, International Action to Avert the Impending Protein Crisis, (New York: UN, 1968).

(6) For the political and economic factors influencing these developments, see D. Banerji, "Epidemiological issues in Nutrition", Indian Journal of Nutrition and Dietetics, Vol.16, 1979.

(7) Sukhatme, 1982, p.247.

The most reliable method is clinical examination. Other methods include laboratory and biochemical examinations (haemoglobin estimation and examination of stools & urine) to diagnose specific deficiencies; dietary examination, including a diet survey, to assess the amount and type of food consumed by people; the study of vital statistics, namely infant mortality rate (IMR), neonatal mortality rate, mortality in the age-group 1-4 years, and life expectancy; and the assessment of ecological factors. (8)

In the measurement of the magnitude and severity of PCM, reference is made to the standards of normal pattern of growth and development in infancy and childhood. The reference population and growth patterns most widely used in the UN reports, are the standards of height and weight for age of American children known as the "Harvard Standards". (9) The ICMR, from 1956 to 1965, sponsored a nation-wide cross-sectional , anthropometric study on Indian Children (1-20 years of age) to establish standards of reference of growth and development, the extent of deviation from the existing western standards (particularly the Harvard Standard), and the factors influencing growth and development: income, socio-economic status, religion and residence. (10) The study established that both height and weight for age decreases with socio-economic status, and even socio-economic group II (the second highest) is substantially below Harvard Standards (HS). In terms of percentile distributions, the ICMR study shows that by age of two years, the 90th percentile of Indian children are at the 50th percentile of HS; in teenage years only the 95th percentile are at median HS. (11) In another study on pre-school children, published in 1974, the ICMR found that the deficit in weight (across regions) was 40-50 percent below that of American Standards. (12)

PCM is classified into three degrees: mild, moderate and severe. Nutritional marasmus and Kwashiorkor are the two severe forms of PCM in childhood. Kwashiorkor, which arises from protein deficiency, is widespread in Africa, while marasmus, mainly due to severe deficiency in overall food intake, is the more common form in India. Such extreme forms however account for only a small proportion of the population; the larger proportion is characterised by mild to moderate malnutrition (Table II). The Indian data establishes that 85 percent of children under five years were suffering from varying degrees of malnutrition in 1981. (13) Surveys among pre-school children from different parts of the country have shown, that the diet of more than 90 percent from the poor economic group is

---

(8) Park and Park, 1979, p.150.

(9) J.C. Waterlow, "Classification and Definition of Protein-Energy Malnutrition", in WHO, Nutrition in Preventive Medicine, Monograph Series No.62, (Geneva: WHO, 1976), p.534.

(10) Indian Council for Medical Research, Growth and Physical Development of Indian Infants and Children, Technical Report Series No.18, (New Delhi: ICMR, 1972).

(11) D. Seckler, "Small but Healthy". In Sukhatme,(ed), 1982, p. 131-132.

(12) Indian Council for Medical Research, Studies, on Pre-School Children, Technical Report Series No.26, (New Delhi : ICMR, 1974).

(13) See also the chapter on Health of Women and Children.

Table II : PERCENTAGE DISTRIBUTION OF 1-5 YEARS CHILDREN ACCORDING TO GOMEZ CLASSIFICATION (1976-80)-NNMB DATA.

YEAR OF SURVEY	NUMBER SURVEYED	NORMAL 90%	MILD 75-90%	MODERATE 60-75%	SEVERE 60%
1976	6775	10.6	41.1	39.8	8.5
1977	4713	14.3	42.4	34.9	8.4
1979	3713	14.2	43.2	34.7	7.9
1980	4008	14.8	47.9	32.6	4.7
1981	2516	15.3	45.5	34.5	4.7

Source : National Nutrition Monitoring Bureau. (14)

deficient in calories. The deficiency in protein was observed only in 30 percent of the children. (15)

Controversy regarding the extent of PCM in India

The measurement of malnutrition is a politically sensitive issue, as the average energy requirement forms an integral part of the procedure for calculating the poverty line, and for formulating appropriate strategies to alleviate poverty. In 1971, Dandekar and Rath defined the poverty line as that level of annual per capita consumer expenditure, which would ensure a diet adequate at least in terms of calories (and not food or shelter). Using the recommended allowance of 2250 calories per capita (per person, per day), they estimated that 40 percent of therural, and 50 percent of the urban population, did not have income for satisfying their minimum calorie requirement. (16)

However the use of a fixed, average calorie allowance norm has been disputed by P.V. Sukhatme. Pointing to the considerable inter-individual and intra-individual variations in daily calorie intake and energy expenditure,he states that, "man's requirement for any day or period is not fixed but dynamic, adapting itself to intake over a fixed range from 60 to 140 percent of the average dietary allowance". Furthermore, ".....the body has the innate capacity to interact with environment to adapt requirement to intake by varying the efficiency of utilization by slowing down rate of metabolism and speeding up the same as occasion demands". (17) The nutritional requirement in terms of calories should be formulated as a range (and not a single figure) determined by a standard deviation of about 400 calories from the average; the lower unit of this range constitutes

(14) Cited in C. Gopalan, "The Mother and Child in India", Economic and Political Weekly No.4, January 26, p.161.

(15) C. Gopalan et al., Nutritive Value of Indian Foods, (Hyderabad: National Institute o Nutrition , 1981), p.43; UNICEF, Statistical Profile of Children and Youth in India. (Ne Delhi: UNICEF/SCAR, 1977); Central Institute of Research and Training in Public Co operation, Perspectives on the Child in India, (New Delhi: CIRTPC, 1975).

(16) V.M. Dandekar and N. Rath, "Poverty in India", Economic and Political Weekly, No.8 January 2, and 9, 1971.

(17) P.V. Sukhatme, "Poverty and Malnutrition". In Sukhatme (ed) 1982, pp. 37-38.

undernutrition. 1900 K cal is the lower threshold limit, and accordingly only 25 percent of the urban population and 15 percent of the rural population, are undernourished. In his view, a lower out-off point for povertyensures that the benefits of official programmes will be directed towards those who are really poor, and not the non-poor. (18)

However, even after taking the question of variation into account, Dandekar demonstrates that 38 percent to 40 percent of the rural population is undernourished. The NNMB data on households where diet survey was carried out, supports this figure. (19) To quote Dandekar, "....the choice for the poor inevitably falls on expenditure. They adjust their energy expenditure to their energy intake. Over a long period, maybe extending over generations, the poor have achieved a low level equilibrium with low intake and low output". (20)

Experimental studies on animals have shown that malnutrition during critical phases in infancy and early childhood can lead to the stunting of physical growth. "Growth retardation in the poor children seen as low body weight and height is the result of a child trying to adapt itself to chronic low energy (and essential nutrients) intake". (21) This is evident in the short adult stature in developing countries. Children "must be fed energy at the recommended levels for their age so as to enable them to catch up in their growth". (22) Furthermore, poor malnourished children are at a greater risk compared to their well-to-do counterparts, from complications arising out of communicable diseases. Measles, for instance, precipatates severe malnutrition in an already malnourished child; (23) it is also an important cause of child mortality in the lower socio-economic groups.

A lower out-off point for defining the poverty line has political implications, particularly for programmes on nutrition, for determining the extent of national expenditure on health, and for settling the minimum wages of agricultural labour.

D. Banerji has probably made the most relevant observation on this issue of measurement. Pointing out the human perspective, i.e. the relationship between man and hunger, he observes, "the number of days in a year an individual suffers from varying degrees of hunger is a point of central concern for those who want to have a sensitive tool for measuring the degree of undernutrition in a population". (24) That the indivídual is hungry is the central fact. All else is secondary.

---

(18) Ibid, p. 46.

(19) V.M. Dandekar, "Measurement of Undernutrition", Proceedings of the Nutrition Society of India, No. 27, 1982.

(20) Ibid, p. 24-25.

(21) Nutrition News, July 1982.

(22) Ibid.

(23) "Malnutrition - Infection - The Vicious Cycle", Nutrition News, Vol.6, No.4, July 1985.

(24) D. Banerji, "Measurement of Poverty and Undernutrition", Economic and Political Weekly, No. 39, 26 September 1981, p. 1581.

In a study using hunger as the indicator, Banerji demonstrated that almost half the Indian population was unable to satisfy its hunger. The proportion would increase greatly if the criterion was shifted from that of 'two square meals a day', to 'two square wholesome meals a day'. (25)

The Real Reasons for Hunger

Are hunger and generalised malnutrition inevitable? The post-independence growth in food production, at the rate of 2.6 percent per year, has kept pace with the increase in population, especially after the introduction of the new agricultural technology in the 60s. This is, however, valid only for the overall food supply in terms of calories. The distribution of food consumption is highly skewed, (26) as the discussion on the poverty line has shown.

(i) Skewed distribution of land, inputs and income : 72% of the population (1981) lives in the rural areas, depending mainly upon agriculture for its livlihood. Rising agricultural productivity (per hectare of cropped area and in terms of prices) has not brought prosperity to all the rural classes. Non-implementation of land reforms, high costs of the new technology, and lack of alternative employment opportunities in urban-based capital-intensive industries has intensified the pauperisation of the lower socio-economic groups. This is evident from the fact that nearly 55 percent of all operational holdings in 1976-77 were marginal holdings (less than 1 hectare), and the number had increased from 51 percent in 1970-71. Marginal and small holdings (1-2 hectares) together constituted nearly three-fourths (72%) of all operational holdings, but their share of the total area operated was only 23.4 percent. At the other end, large (10 heactares and more) and medium (4-10 heactares) holdings, comprising 14.6 percent of all holdings, operated 57 percent of the total area. (27).

The number of agricultural labour households also increased from 5.7 million in 1964-65 to 10.2 million in 1974-75. (28) The daily wage rate of field labour in most states, has not kept pace with the rise in productivity. (29) The daily wage for agricultural labour in Maharashtra is Rs. 5.10 instead of the minimum wage of Rs. 10.70, which alone would enable the labourer to meet the ICMR's recommended intake of 3900 cal. and

---

(25) Ibid, p. 1581.

(26) V.K.R.V. Rao, Food, Nutrition and Poverty in India, (New Delhi : Vikas Publishing Hous Pvt. Ltd., 1982), pp. 116 and 121; T. Philip, "Food For All", Economic Times, Saturda Supplement, 17 October, 1981; R. Paul, "Serious Food Crisis Ahead", Economic Times, October, 1981; A. DeSouza, "Political Economy of Food", Economic Times, 3 November 1981; A Gupta, "Poverty and Unemployment", Economic Times, 22 October 1981.

(27) "The other Growing Army", Economic and Political Weekly, Review of Agriculture, No.39, September 1981, p. A-77.

(28) Ibid.

(29) See Tables 42-43 for Indices of Real Wage Rates of Male Field Labour and Indices Productivity Per Hectare of Cropped Area in Different States (with 1956-57 as Base year) In Centre for Development Studies, Poverty, Underdevelopment and Development Policy (Madras: Orient Longman, 1977), p.90.

3000 cal. respectively for male and female workers doing heavy work. (30) There is a close relationship between the amount of land a man owns and his calorie intake (Table III).

Table III : CALORIE AND PROTEIN INTAKE ACCORDING TO LAND OWNERSHIP FOR DIFFERENT STATES-POOLED (1975-78).

STATE	NO LAND (PROTEIN)	CALORIES	5 ACRES (PROTEIN)	CALORIES	5-10 ACRES (PROTEIN)	CALORIES.
Kerala	44.2	1824	44.3	1904	57.5	2232
Tamil Nadu	52.3	2108	56.6	2320	66.7	2671
Karnataka	63.3	2312	65.3	2576	76.3	2860
Andhra Pradesh	53.8	2274	59.7	2480	72.3	2824
Maharashtra	58.8	2006	62.5	2178	65.7	2251
Gujarat	57.2	1999	60.1	2042	64.5	2234
Madhya Pradesh	58.0	1977	59.9	1939	67.1	2108
West Bengal	48.7	1866	59.2	2346	76.3	3055
Uttar Pradesh	64.2	1991	66.2	2116	73.9	2227

Source : NNMB, Report for the year 1979, (Hyderabad: NIN, 1980), Table 50, p.55.

Almost all the poor cultivators and labourers are unorganised while the rich and middle farmers enjoy the benefits of well-structured co-operatives.

(ii) Agro-economics of Nutrition : Pulses and cereal grains (including coarse varieties) are complementary in improving the amino-acid balance of vegetarian diet; consequently the traditional Indian diet of dal-roti and 'dal-bhat' has been adequate in respect of proteins. (31) However serious distortions in the diet pattern are observed with the increasing marketisation of the economy and the commercialisation of agricultural production.

The production of pulses and coarse grains (sorghum, millet, maize), cultivated mainly in the dryland areas by small and marginalfarmers, and providing the mainstay of the diet and the major source of protein of the poor, has fallen in relation to the commercially attractive, high yeilding cereal production. For example, protein produced through cereals and pulses which was in the ratio of 58:42 percent in 1951, changed its mix to 88: 22 per cent in 1978-79.

Not only did the overall production of pulses decline from 10 - 13 million tonnes to 8.4 million tonnes in 1979-80, but the prices of pulses overtook those of cereals, rising to Rs. 295/- per quintal in 1980 as against Rs. 189/- per quintal for cereals. That pattern has continued to date. The ratio of production of fine grain to coarse grain has also

(30) A. Bang, "Minimum Wage for Agriculture Labour in Maharashtra", Economic and Political Weekly, No. 35, 29 August, 1981, p.1419.

(31) H.K. Jain "Evolutionary March of Indian Agriculture-Catching up with 2000 AD", Proceedings of the Nutrition Society of India, No.30, 1984, p.7; V.K.R.V. Rao, "The Vegetarian Tradition in Indian Diet". In Rao, 1982, pp 1181-148.

changed. (32) These trends adversely affect the diet pattern and meagre consumption of the poor households.

Commercialization also means the diversion of quality foods from rural to urban areas. The 'Operation Flood" programme for instance, has increased the availability of quality milk for urban consumers at the expense of the diet of the poor rural producers according to V.K.R.V.Rao. (33) Increased incomes from the market sales of agricultural produce does not necessarily improve rural consumption in nutritional terms; production for the market leaves the poor farmer at the mercy of high prices of foodgrains.

The public distribution system has worked best as an emergency measure against shortages arising from droughts, floods and seasonal calamities. It has not become a part of the economic infrastructure linked with the abolition of nutritional poverty and the avoidence of wastage.

(iii) Illiteracy, Morbidity and Mortality : The rate of infant mortality (IMR), general morbidity and life expectancy are closely interlinked with poverty, malnutrition and the extent of literacy. The IMR was 114 (per 1000 live-births in 1980, but its decline from 130 per 1000 in 1977 was accounted for by a decline in just five states. Some 46 percent of all child mortality is in the age-group of under five years, and the expectancy at life at birth (1980) is 54.1 years and 54.7 years for males and females respectively. (34) The favourable health statistics in Kerala, particularly the low IMR (42 per 1000 live births in 1978), (35) is partly attributable to the very high literacy (70.4%), especially female literacy (65.7%), and high female status. The national literacy rate on the other hand is only 36.2 percent (1981 census).

Amartya Sen drawing a comparison between the performance of India and China in eliminating regular hunger and expanding longevity, observes that though the post-independence Indian economy has been less vulnerable to large-scale famines and starvations in comparison to the severe famine and high mortality in China in the years 1959-61, the latter has vastly improved the general level of nutrition and life expectancy, and expanded the educational and health facilities. To quote him, "One of the major blots is the survival of regular malnutrition - as distinct from acute starvation and famines - in most parts of India..... India's 'self-sufficiency' in food has to be assessed in the light of the limited purchasing power of the Indian masses. Their needs maybe large, but their 'entitlements' in the market are small; that the economy produces enough to meet their market demand is not in itself a gigantic achievement". (36)

---

(32) S. Rajagopalan, "Food and Nutrition Strategies for Achieving Health for All by 2000 AD A Macroview", Proceedings of the Nutrition Society of India, No.27, 1982, p.42.

(33) V.K.R.V. Rao, "A National Policy for Food and Nutrition". In Rao, 1982, pp. 128-129.

(34) Gopalan, 1985, pp. 161-162.

(35) P.G.K. Panikar, "Resources not the constraint on Health Improvement, A Case Study o Kerala", Economic and Political Weekly, No.44, November 3, 1979, pp. 1803-1810.

(36) Amartya Sen, "India : The Doing and the Undoing", Economic and Political Weekly, No.7 February 12, 1983, p.237.

3. VITAMIN AND OTHER MICRO-NUTRIENT DEFICIENCIES

In contrast to PCM which is generalised, vitamin and micro-nutrient deficiencies are localised, arising from the lack of a specific nutrient.

Vitamin A Deficiency

Vitamin A deficiency is prevalent in all states, except the northern states (Delhi, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir), and is most widespread in South India and Bengal. (37) It is concentrated among the children of poor socio-economic groups, and is highest in remote tribal and rural areas, and possibly slums. Initially it manifests in night-blindness. As time passes the cornea becomes affected, leading to blindness. Among 92 million Indian Children aged 15-20 years, 7.4 million have non-corneal, and 0.22 million have corneal, X erophthalmia (i.e. advanced degree of vitamin A depletion). The same author estimates that 52,000 Indians become blind annually, and 110,000 to 131,000 partially blind (38)

Deficiencies of B Complex vitamins

The poor intake of Vitamin B (thiamine) leads to a group of diseases called Beri-Beri, commonly found in areas with a diet of polished rice, such as coastal Andhra Pradesh. Niacin deficiency leads to pellagra, and has been observed in the Deccan where jowar is the staple food. (39)

Iron deficiency Anaemia

Some 40-60 percent of pre-school children, 25 percent of women in the reproductive age, and 50 percent of pregnant women in the Third Trimester of pregnancy in India suffer from iron deficiency anaemia. (40) It can adversely affect the course of pregnancy, and is directly or indirectly a major cause of maternal mortality. (41) It is directly responsible for 4.3 percent of the total mortality in the country. (42) Recent data suggests that its incidence in adult males and non-pregnant women may be much higher than hither-to believed. (43) The lesser known, and less common, megaloblastic anaemia or pernicious anaemia is due to the deficiency of either folic acid or vitamin B_{12}, or both.

---

(37) Gopalan et al, 1981, p.43.

(38) P.M. Shah, "Strategies for Prevention of Malnutritional Blindness in India: operational, methodology, management, monitoring and cost/benefit", 1978. Quoted in WHO, Technical Series 672, Conrol of Vitamin A deficiency and Xerophthalmia, (Geneva : WHO, 1982), pp. 22-23.

(39) Gopalan et al, 1981, p.46.

(40) B.S. Narasinga Rao, "Iron fortified Salt - Does it modify susceptibility to infection?", Nutrition News, Vol.3, No.3, May 1982.

(41) Gopalan et al, 1981, p. 45.

(42) Central Statistical Organization, "Leading causes of Mortality in India - 1971, (New Delhi: CSO, 1972).

(43) ICMR, "Opportunities and Challenges in Nutrition Research" Proceedings of the Advisory Group on Nutrition Research of the ICMR, July 2-4, (New Delhi: ICMR, 1980).

Goitre

Deficiency in the intake of iodine in the diet causes Goitre (enlargement of the thyroid gland) which is associated with the overactivity or underactivity of the thyroid gland and can result in retarded growth and cretinism. About 40 million Indians suffer from goitre, (44) and with the identification of new endemic areas, over 170 million people need protection against it. (45) The endemic goitre belt stretches across the entire sub-Himalayan region and includes the states of Jammu and Kashmir, Himachal Pradesh, Punjab (3 districts), Haryana (1 district), Bihar (9 districts), Sikkim, Assam, Mizoram, Meghalaya, Tripura, Manipur and Nagaland. Endemic goitre has also been indentified in Andhra Pradesh, the Aurangabad district of Maharashtra, Shahdol and Siddhi districts of Madhya Pradesh, and in Gujarat. The prevalence rate in these areas ranges from 3 percent to 60 percent with an estimated average prevalence of 30 percent.

Recent studies by Kochipillai and others (AIIMS), found evidence of thyroid hormonal deficiency in 3 percent of offsprings. Studies by Agarwal have indicated that risk to the physical and mental development of offsprings of mothers living in endemic goitre areas, is more widespread, serious and insiduous than revealed by occurrences of Cretinism and deaf-mutism. (46)

Lathyrism

The disease lathyrism, characterised by crippling paralysis of the legs and affecting mostly young males, is caused by the toxic substance BOAA (B oxalyl amino alanine) contained in the pulse lathyrus Sativus (Kesari dal). It is endemic in the districts of Rewa and Satna in Madhya Pradesh, and is also prone to epidemic outbursts. Its prevalence is due to a variety of reasons : the traditional birri diet - a mixture of Kesari dal, bengal gram, wheat or barley; the increased consumption of kesari dal by poor farmers during periods of drought and poor rainfall; and the continuing practice by landlords of paying wages in the form of lathyrus sativus to farm labourers. These factors have made it difficult to persuade people to reduce their intake. (47)

The observation of a NIN team (48) that the disease was on the wane in Rewa and Satna, is unwarrented. Available reports indicate that lathyrus sativus has become a cash crop, more profitable to the landlords than as payment in kind. Due to the relative scarcity and current high prices of

---

(44) C. Gopalan, "The National Goitre Control Programme - A Sad Story", Bulletin of th Nutrition Foundation of India, 1981. Reprinted in Nutrition Foundation of India, Th National Goitre Control Programme. A Blueprint for its intensification, Scientifi Report 1, (NFI, 1983), p.55.

(45) Ibid, p.10.

(46) Ibid, p.25 and p.10.

(47) Nutrition Foundation of India, The Lathyrism Problem, Current Status and New Dimensions Scientific Report 2, (NFI, 1983). See also K. Jaya Rao, "Kissa Kesari Ka", in A. Bang A.J. Patel (ed), Health Care : Which way to Go? (Pune : Medico Friend Circle, undated).

(48) National Nutrition Monitoring Bureau, Report of the Year 1979, (Hyderabad : NIN, 1980) p. 258.

pulses like bengal gram, the adulteration of pulses with lathyrus has become a profitable propostion, particularly for sale in Andhra Pradesh and Karnataka. Consequently the land under lathyrus cultivation in MP has expanded, particularly in Raipur/Chhatisgarh districts. (49)

Nutrition and maternal Health

Large number of pregnant women do not get the calories they need. Studies in the 1960s showed that the daily calorie intake of pregnant women from low income groups ranged from 1400 to 1600, in contrast to the ICMR's recommended intake of 2500 cal/day. (50) A more recent study in the same region found no improvement in the dietary status of women despite socio-economic advancement over the years. (51) Batliwala has demonstrated that the respective energy contribution of men, women and children is 31 percent, 53 percent and 16 percent. Women's day-to-day tasks of gathering fuel, fetching water and cooking, demand greater energy expenditure; yet the pattern of food consumption in the family remains biased towards the male members. (52)

Research on the relationship between nutritional status and reproduction has shown that low birth weight and prenatal mortality are significantly higher among severely undernourished girls, and sometimes among those who are moderately undernourished (Table IV). However, a study on the reproductive performance in rats with different histories of malnutrition showed, that rats with intergenerational malnutrition had low weight gain in pregnancy but the duration and number of live-births was no different from well-fed controls, suggesting adaptation to long-term dietary deprivation. (53) This may account for the rising population growth rate in poor, Third World countries.

Table IV : MATERNAL NUTRITION STATUS AND OUTCOME OF PREGNANCY

GROUP ACCORDING TO NUTRITIONAL STATUS IN CHILDHOOD	FOETAL LOSS %	BIRTH WEIGHT kg	BIRTH WEIGHT BELOW 2.5KG. %	DEATH DURING INFANCY %
Severaly undernourished	11.8	2.41	52.9	11.8
Moderately undernourished	8.9	2.57	42.2	8.9
Mildly undernourished	8.2	2.55	37.1	3.3
Normal	3.3	2.62	38.3	6.9

Source : NIN, Annual Report - 1 Jan. to Dec. 31, 1979, (Hyderabad: NIN, 1980), Table 69, p.112.

(49) NFI, 1983, p.41.

(50) C. Gopalan and B.S. Narasinga Rao, "Special Report Series No.60", (New Delhi: ICMR, 1980).

(51) NNMB, 1980, pp. 86-89.

(52) S. Batliwala, "Rural Energy Scarcity and Nutrition: A New Perspective", Economic and Political Weekly, No.9, February 27, 1982.

(53) J.R. Gallner and G. Zartarian, "Reproductive Performance in Rats with different Histories of Malnutrition", British Journal of Nutrition, Vol.45, No.2, March 1981, p.251.

4. A. ATTEMPTS TO REMEDY THE SITUATION

The Union and State Governments have sought to tackle problems of nutritional disorders through nutritional intervention programmes included in successive Five Year Plans, and aided by international agencies. A review of the major programmes is given below.

School Mid-day Meal Programme (MDM)

This programme was initiated in Kerala in 1961, and its coverage has increased to over 16 million children between the ages of 6-11 years of age in some states. (54) Meals, snacks, milk and other diet supplements are given to children in primary schools with the following objectives:

(a) provision of supplementary nutrition of 300 cal. with 8-12 gm. of protein per day for at least 160 days in a school year;
(b) improvement of the physical and mental development of the children;
(c) improvement in school attendance;
(d) serving as a foci for nutrition education. (55)

Most evaluation studies have found no appreciable gains in terms of the stated objectives. (56) This is mainly due to (i) the lack of continuity in the supply of food materials; (ii) pilferage during distribution; (iii) absence of other services like health; (iv) the substitution of the regular meal, rather than its supplementation by the mid-day meal; and (v) lack of a defined target and of effective supervision. (57)

The Government plans to reorganise the programme by providing safe drinking water and encouraging the development of kitchen gardens in the schools, before expanding the number of projects.

Applied Nutrition Programme (ANP):

This programme takes a broader perspective. Its objectives are,

(a) to impart nutrition education;
(b) to improve the nutrition intake and dietary habits of nursing and expectant mothers and children through promoting local production of protective foods;
(c) to set up community kitchens and school gardens;
(d) to set up poultry, and fishing units, and centres for animal husbandary. (58)

---

(54) Banerji, 1985, p.326.

(55) C.R. Soman, "The School Lunch Programme - Kerala Experience", (mimeographed, 1979).

(56) Ibid.

(57) Government of India, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi : Planning Commission, 1980).

(58) K.V. Natarajan, "Administration and Organisational Implications of Nutrition Programmes in India", Paper presented at Seminar on Social and Economic Aspects of Nutrition, (New Delhi, 1974).

It was first introduced in 1960 in Orissa and Andhra Pradesh, and was subsequently extended in 1973 to all other states.

The shortcomings in the programme have been identified as (i) the lack of co-ordination among the involved departments; (ii) lack of suitable land, (59) scarcity of water and nonavailability of improved seed for school gardens; (60) (iii) lack of proper advice, good feed back and coordination among workers for establishing poultry units and pisciculture; (61) (iv) lack of assistance to extension workers. The programme did not have the expected demonstration effect, and there has been a gradual shift to the ICDS programme since 1975.

Special Nutrition Programme (SNP)

This programme was launched in 1970-71 as a feeding programme through a 'take home' system. The objectives were (a) to provide 300 cal. with 10-12 gm of proteins to children in the age-group 0-6 years for 300 days a year; and (b) to provide 500 cal. with 25 gm. of protein for pregnant and lactating women again for 300 days a year. By the end of March 1980, the programme covered 8.2 million beneficiaries.

Evaluation of the programme found failure in the selection of target groups on the basis of nutritional deficiences, and lack of continuity of food supply to the same children. The food was shared by other family members, and it did not reach the crucial 1-3 year olds as very often mothers did not bring them to the centre. (62) Subsequently, the need for a new, integrated approach was felt. The SNP was incorporated into the Integrated Child Development Services (ICDS) projects in the Fifth Plan period.

Integrated Child Development Services Scheme (ICDS)

This programme was formulated in 1972, and provides an integrated package of services to pre-school children (below 6 years of age), pregnant women and nursing mothers. These services include (i) supplementary nutrition, (ii) immunisation, (iii) health check-up, (iv) referral services, (v) nutrition and health education, (vi) non-formal education. Its objectives are -

(a) to improve the nutritional and health status of children aged 0-6 years;
(b) to reduce mortality, morbidity, malnutrition and school drop-out rates;
(c) to co-ordinate the work of various departments concerned with child development;

---

(59) GOI, 1980.

(60) R.P. Devadas, "Factors to be considered in the selection of audio-visual aids for ANP", Journal of Education, Research and Extension, 5, 1968.

(61) Ibid.

(62) GOI, Planning Commission, 1980.

(d) to enhance the ability of mothers to look after the health and nutrition needs of their children through proper nutrition and health education. (63)

In October 1975, 33 projects (18 rural, 11 tribal and 4 urban) were taken up on an experimental basis. By February 1981, 2000 ICDS projects (105 in rural areas, 67 in tribal and 28 in urban slums) had been sanctioned. (64) The Programme Evaluation Organisation (PEO) of the Planning Commission noted the need to improve the cost effectiveness of health delivery and nutritional components, and pointed out to the lack of communication between those responsible for delivery of services and the beneficiaries. (65) However the study by Tandon et al, noted the uniform success of ICDS in tackling infant mortality, infection and infestation rates in the project areas. (66)

The Government has proposed to extend the number of ICDS projects, and to improve the integration of nutrition with other services. The Sixth Plan noted that the strategy for nutrition should not be merely interventional or particular, but must aim at alleviating hunger and malnutrition in all sections through family-centred poverty alleviation measures. It noted the importance of employment and income in nutrition consciousness and in improving conditions of living. (67)

B. PROGRAMMES FOR SPECIFIC DEFICIENCY DISEASES:

(a) Vitamin A Deficiency Prevention Programme
This programme involves the administration of large doses of vitamin A as prophylaxis, once every six months, to children in the age-group of 1-5 years living in endemic blindness areas. It forms a part of the Maternal & Child Health and Family Welfare Projects. However, the Health Departments have found it difficult to implement this programme effectively. (68)

(b) Prophylaxis Against Nutritional Anaemia
The Union Ministry of Health and Family Planning has a scheme to provide ferrous sulphate and folic acid to mothers and children through the MCH centres, as a preventive measure against anaemia. (69)

---

(63) R.P. Devadas, "Integrated role of Nutrition in Medicine - Promotion of Health and Family Planning and Prevention of Illness", Indian Journal of Nutrition and Dietetics, 13, 1976, pp. 355-361; Government of India, Integrated Child Development Services Scheme, (New Delhi: Ministry of Education and Social Welfare, 1978), pp. 1-31.

(64) For other aspects of the Scheme, see also the Chapters on "Health of Women and Children" and Organisation of Health Services and Manpower Development.

(65) Government of India, Report on the State of Preparedness of the ICDS Project, (New Delhi: Planning Commission, Programme Evaluation Organization, 1976).

(66) B.M. Tandon et al, "Integrated Child Development Service in India - Evaluation of the Delivery of Nutrition & Health Services and the Effect on the Nutritional Status of the Children", Indian Journal of Medical Research, 74, March 1981, pp. 385-394.

(67) GOI, Planning Commission, 1980; Banerji, 1985, pp. 328-329.

(68) Natarajan, 1974.

(69) Devadas, 1976.

(c) National Goitre Control Programme

This programme is financed by the Ministry of Health and Family Planning, and was launched at the end of the Second Plan Period. It has three components, namely -

(i) Survey of goitre in suspected areas to identify and assess its prevalence,

(ii) production and supply of iodized salt to endemic areas to prevent and control goitre, and

(iii) resurvey, after five years of continuous supply of iodised salt to assess the impact of the programme.

The failure of the NGCP has been due to deficiencies in all the three components. The mapping of endemic areas has been unsatisfactory; supply of iodized salt has suffered from inadequate production and bottlenecks in distribution; and the health agencies of endemic states have displayed ignorance and apathy. Finally, no attempt has been made to generate awareness about the goitre problem among the public. (70)

(d) Food Fortification Programmes

Fortified bread was first introduced in 1968. Balahar, a low-cost protein-rich food produced by the Public Production's Union at Anand, Miltone produced from groundnut at the Government Dairy, Bangalore, and 'chaisathi', a vegetable protein based beverge developed at Baroda dairy, are other examples of fortified food distributed to the needy. (71)

The Government's strategy includes the development and promotion of locally cooked foods, as these are cheaper and give employment to local woman. Efforts are being made to disseminate nutrition education through feeding programmes. All these have however had a limited impact.

---

(70) NFI, 1983. See Table on Impact of the Programme, p.57, highlighting the failure of NGCP after 20 years in operation.

(71) GOI, 1980.

X

ENVIRONMENT AND HEALTH

1. Introduction 182

2. Water Supply, Water Pollution And Wastes Disposal 182

A. Water supply and sanitation 183

- Planned development
- Training and research
- Urban water supply
- Rural water supply
- Urban sewerage and sanitation
- Rural sanitation

B. Water pollution 192

3. Housing 195

A. Urban housing conditions and slums 197

B. Rural housing 200

4. Air Pollution And Noise Pollution

A. Air pollution 200

B. Noise pollution 204

5. Workplace Environment

A. Toxic chemical agents 204

- Dusts
- Chemicals

B. Biological and chemical agents 207

- Accidents

ENVIRONMENT AND HEALTH

1. INTRODUCTION

It is well known that both genetic and environmental factors are responsible for disease production. However, since over a decade now, the environmental determinant has assumed great importance and the emphasis has shifted to monitoring water supply, industrial waste, sewerage, sanitation, suspended particulate matter & chemical compound levels in the atmosphere, & the adverse effects of modern agricultural inputs. (1)

Epidemiological differences between, and within, countries can serve as pointers to the role of environmental factors in different regions of the world. The three broad groups of diseases responsible for morbidity and mortality are _

(a) Communicable Diseases
(b) Degenerative Diseases
(c) Neo-plastic Disesases (Cancers). (2)

The relative frequency of each of these varies according to the socio-economic state of a country and the condition of its environment (with certain cultural practices re-inforcing the health hazards arising from environmental and economic conditions). Communicable diseases are the main health problems in the developing countries, and are largely due to the inadequacy of basic environmental sanitation (an associate of poverty). Degenerative diseases, such as those of the heart and circulatory system, and neo-plastic diseases are characteristic of the developed countries (and with modernization, are growing in significance in developing countries too). These are largely the outcome of health hazards associated with industrialization and urbanization. An integrated approach to health would mean, besides adequate curative facilities, preventive and promotive programmes to deal with the environmental factors responsible for morbidity & mortality.

This chapter is devided into four sections, and discusses the relationship of health to the following environmental factors in the Indian context :

Water supply, Sanitation and Water Pollution.
Housing.
Air Pollution & Noise Pollution.
Workplace Environment.

2. WATER SUPPLY, WATER POLLUTION, SEWERAGE AND WASTES DISPOSAL

The provision of safe water supply and basic sanitation is either absent or grossly inadequate for the vast majority of the Indian rural and urban population. Most of the acute diseases affecting Indians are water-borne such as diarrhoeas, amoebic dysentry, cholera, typhoid & infective hepatitis (jaundice). Inadequate water and sanitation can cause diseases in

---

(1) United National Environment Programme, The State of the Environment 1972-82 (Selected topics 1977-81), (Nairobi : UNEP, 1982).

(2) Ibid.

several ways - (3)

(i) Waterborne diseases, spread by drinking water contaminated by faees or by using contaminated water for personal hygiene or for washing food, include all the above mentioned diseases;

(ii) Water-washed diseases, spread by poor quality water used for personal hygiene, include skin diseases such as scabies and leprosy, and eye disease such as trachoma & conjunctivities;

(iii) Water-insect-related diseases, spread by insects (carriers or vectors) that breed in water or bite near it, include malaria and yellow fever (mosquito), river blindness (blackfly) and sleeping sickness (tsetse fly);

(iv) Water-based diseases, spread by parasites living in water, include schistosomiasis (bitharzia) transmitted by snails and guinea worm transmitted by microscopic waterflea; and

(v) diseases from polluted water (or food) supply include hookworm, roundworm and whipworm.

It is estimated that 73 million work days are lost every year in India due to water-related diseases. (4)

According to the data available at present, the coverage of the urban & rural populations by protected water supply & sanitation services is as follows: (5)

	Percentage Population Served
1. WATER SUPPLY	
Urban	84
Rural	33
2. SANITATION	
Urban sewerage system	20
Rural Latrines	2

A. WATER SUPPLY & SANITATION

Planned development

In British India on the eve of Independence, only 12.7 million people living in 253 towns were served by protected water supply (Table I). The vast majority, concentrated in the rural areas, depended on unprotected

---

(3) "Water & health : the facts", UNICEF News, Issue 116, 2, 1983, p.10.

(4) D. Mankad, "Environmental Pollution and Human Health. An Overview of the Indian Situation", in Medico Friend Circle (ed), Issues In Environmental Health : The Case of Pesticides, (Bombay : CED-MFC, 1986).

(5) Government of India, Planning Commission, Sixth Five Year Plan 1980-85, (New Delhi : Planning Commission, 1981), pp. 399-400.

wells, tanks, rivers and streams for their water supply. The majority of the towns also lacked any protected water supply services. (6)

The Health Survey & Development Committee (Bhore Committee, 1946) was the first to focus attention on the existing status of water supply & sanitation. It formulated broad guidelines for the planning of a national health service, and as part of preventive work, made recommendations regarding housing, village & town planning, water supply, disposal of human excreta, general sanitation, control of water pollution, control of disease carrying vectors, etc. (7) It also defined targets and programmes and their financial implications.

After Independence, in June 1948, the Government constituted the Environmental Hygiene Committee to go into the recommendations of the Bhore Committee. It formulated specific plans & targets, taking into consideration several constraints, and submitted its report in 1949. (8)

The National Water Supply and Sanitation programme was launched in August-September 1954, on the request of the States for central assistance regarding finances, training of personnel & supply of materials (9) in implementing water supply & sanitation schemes. The National Programme was designed & financially aided by the U.S. Government. A Central Public Health & Environmental Engineering (CPHEE) organization was established in late 1954 within the Directorate General of Health Services and was headed by a Depty Director General (Public Health Engineering). This organization was subsequently expanded with an Advisor (Public Health Engineering) as its head; at present it is functioning in the Ministry of Works, Housing & Urban Development. It is responsible for co-ordinating the activities of the states and the centre in the implementation of the National Programme, developing training programmes for meeting the demand for man-power and acting as a clearing house for the loans & grants sanctioned under the national programme to the states.

In the First Plan period there was a recognition of the problem and a very modest start was made regarding construction. In the Second Plan period training & research programmes were initiated and the public health engineering profession was established.

Training & Research : Prior to Independence there was no speciality in public health engineering and the basic civil engineer was responsible for water supply & sanitation works. On the recommendations of the Bhore Committee, a post-graduate specialisation course in public health

---

(6) S. Subba Rao, Comprehensive Plan for Water Supply and Environmental Sanitation for the Country for the next two decades (Upto 2000 A.D), (Calcutta : All India Institute of Hygiene & Public Health, 1978), p.8.

(7) Government of India, Health Survey & Development Committee (Bhore Committee), Report, Vol.I, (New Delhi : 1946).

(8) See Government of India, Health Survey & Planning Committee (Mudaliar Committee), Report, Vol. I, (New Delhi, Ministry of Health, 1962), p. 47-48.

(9) According to the Environmental Hygiene Committee's estimates, there was a need to increase the production of steel pipes (annual demand: 40,000 tons), galvanised iron & wrought iron pipes (15,000-20,000 tons per annum), chlorine (800 tons per annum) & alum (12,000-15,000 tons/annum). See Subba Rao, 1978, p.10.

engineering was initiated in 1948 at the All India Institute of Hygiene & Public Health (AIIHPH), Calcutta. Three more post-graduate training centres were established in 1954. Today, there are a number of institutions offering post-graduate degree & diploma courses. Training of auxiliary personnel has also been started. (10)

At Independence there was hardly any research on applied technology in water supply & waste water disposal, either to modify imported technology so as to suit local conditions or to develop appropriate technology using indigenous resources. The cost of imported technology & expertise was a major constraint in developmental works. In 1954 the ICMR set up a Public Health Engineering Research Unit (PHERU) in the AIIHPH, Calcutta. The Central Public Health Engineering Research Institute (CPHERI), later renamed National Environmental Engineering Reserch Institute (NEERI), was established at Nagpur in 1958 under the Council of Scientific & Industrial Research (CSIR). It has a large network of field (zonal) centres in different states. (11) Other academic institutions also receive grants to undertake research in this field.

In April 1960, the National Water Supply & Sanitation Committee (Simon Committee) (12) was constituted to review the progress made under the National Programme till the end of the Second Plan. The Report stressed the need for an immediate survey & investigation to obtain correct data on the existing conditions, both in urban & rural areas, on which future planning & implementation could be based. It found that the States themselves lacked data & information regarding the magnitude & nature of the problems. The report strongly recommended that minimum drinking water be provided to all villages in the country by the end of the Third Plan period.

The budgetry allocations & financial outlays on water supply & sanitation schemes have increased considerably in the succeeding Five Year Plans (see Table IV, chapter III). However, during the period 1951-74, out of the total investment of Rs, 8550 crore made by the central & state governments for providing water supply & sanitation facilities, over 65 per cent was in the urban areas. (13) Uptil the end of the Fourth Plan period (i.e. upto 1974), "the water supply programme was not given a high enough priority in the national planning process. ....There was also at the same time insufficient appreciation of the magnitude & complexity of the problem." (14)

It was in the Draft Fifth Five Year Plan that the importance of providing safe water supply & sanitation as a basic minimum need was reiterated. The objective of the Minimum Needs Programme for drinking water was to provide the facility to all villages suffering from chronic scarcity or having unsafe sources of water. The drought of 1979-80 (and the subsequent drought experienced in many districts of different states), which

---

(10) Ibid, pp. 54-62.

(11) Ibid, pp. 62-66.

(12) Government of India, National Water Supply & Sanitation Committee (Simon Committee), Report, (New Delhi : Ministry of Health, 1960).

(13) GOI, Planning Commission, 1981, p. 397.

(14) Ibid, p.397.

was accompanied by an acute scarcity of drinking water due to the drying up of wells, tanks & other sources, added urgency to the problem. The Sixth & Seventh Plans coincide with the UN sponsored International Drinking Water Supply & Sanitation Decade 1981-90, which commits the member - countries & international agencies to provide safe drinking water & sanitation for all people by 1990. (15) Table II, chapter III, gives the Sixth & Seventh Plan outlays & the heads of expenditure in the water supply & sanitation sector.

Urban Water Supply

Tables I(a) & (b) show the growth of protected water supply facilities in urban India.

Table (a) : PROTECTED WATER SUPPLY (PWS) IN URBAN INDIA

YEAR	PROTECTED WATER SUPPLY FACILITY
1947	Only 253 towns with a total of 12.7 million population (48.5% of urban population), out of a total of 1471 towns had PWS. This accounted for a total of only 6-15 per cent of the total population in British India. Per capita supply was low at 1-15 gals./day.
1961	Only 29 per cent of the 1451 towns had PWS.
1972	70 per cent urban population had piped water supply.
1978	1890 towns out of a total of 3119 towns had piped water supply. Some 80 million out of 184 million urban population had PWC & 50 per cent of these had house connections.

Sources : 1947 : GOI, 1949, cited in Subha Rao, 1978, p.8.
1961 : GOI, Census of India, 1961.
1972 : I. Mahadevan, Health in India 2000 AD : Preliminary Exercise, (Bombay: Dept. of Humanities, IIT), p.88.
1978 : P. Stone, Water Supply & Sewerage Sector Planning & Prospects - Preliminary Report, (New York : World Bank 1978), p.37.

Table (b) : COVERAGE OF WATER SUPPLY IN URBAN TOWNS IN 1980.

CLASS OF URBAN AREA	TOTAL NO.OF TOWNS	NUMBER SERVED	TOTAL POPULATION (IN LAKHS)	POPULATION SERVED (IN LAKHS)
(1)	(2)	(3)	(4)	(5)
Class I (over 100,000)	151	149	533.80	506.72
Class II (50,000 - 99,999)	219	206	147.12	124.80
Class III (20,000 - 49,999)	652	542	199.47	151.97
Class IV (10,000 - 19,999)	987	649	139.61	85.04
Class V (5,000 - 9,999)	820	423	61.97	31.71
Class VI (below 5,000)	290	123	3.96	3.59
Total	3119	2092	1090.93	903.83

Source : GOI, Planning Commission,1981, p.400.

(15) Ibid.

Although the above Tables convey a sense of significant progress regarding urban water supply, yet there are many inadequacies. These include the low per capita supply, ineffecient & ill-maintained distribution systems, the intermittent nature of supply leading to wastage and contamination, unskilled operation of treatment plants leading to frequent breakdowns & substandard quality of supply, and the partial coverage (both spatially & population-wise). (16)

According to the Sixth Plan, while towns with nearly 84 per cent of the urban population have been provided with drinking water facilities, the population coverage is partial and uneven. In the larger cities many of the newer settlements and areas inhabited by the economically weaker sections continue to be without adequate water supply. Further, out of the 1027 towns (Table I (b)) still lacking drinking water supply facilities, as many as 902 belong to the group of towns with a population of less than 20,000. It is in these smaller towns that less than 50 per cent of the population is served by drinking water facilities. The bulk of plan investments in urban water supply has gone to large cities and consequently, the smaller towns have suffered. (17)

Rural Water Supply (18)

The problem of rural water supply was acknowledged in the plans from the beginning. Until the Third Plan, rural water supply formed a component of the amenities scheme of the Community Development Programme and of the water supply scheme in the welfare programme for the backward classes. These were supplemented by the Ministry of Health's national programmes. It was however first given emphasis in the Fourth Plan (1967-74) with the launching of the centrally sponsored accelerated rural water supply scheme in 1972. This scheme aimed at accelerating the efforts of state Government in meeting the needs of areas identified as 'problem' villages. The Special Investigation Divisions, established in the Third Plan period in most states, were the first step in assessing the water supply situation & in identifying 'problem' villages. Preliminary data collected by these Divisions in 1964-65 indicated, that about two-thirds of the rural population lived in areas where it was relatively easy to provide safe drinking water from local sources like wells. The remaining one-third lived in villages which suffered from water scarcity and unsafe water sources, and which therefore required engineering skills, extra financial outlays & time consuming works. These latter villages were categorised as follows:

(a) Villages lacking a source of drinking water within reasonable distance (of say 1.6 kms);
(b) Villages which are endemic to water-borne diseases like cholera, guinea worm etc; and
(c) Villages where the available water has an excess of salinity, iron, fluorides or other toxic elements.

The first category was defined as scarcity and difficult villages, and the other two as heath problem villages.

In 1971-72, an estimated 1.85 lakh villages with 160 million population were served by unprotected simple wells (Table 2(a)). Another 1.52 lakh

---

(16) Subha Rao, 1978, pp.28-29.

(17) GOI, Planning Commission, 1981, p.400.

(18) Ibid, pp. 398-400; Subba Rao, pp.31-34.

Table 2 (a) : STATUS OF WATER SOURCES IN VILLAGES IN INDIA (1971-72)

	NATURE OF WATER SOURCE	NUMBER OF VILLAGES
1.	Adequate but with pollution risk	214,000
2.	Inadequate, unprotected	185,000
3.	Problem villages	153,000
4.	Adequate, quality acceptable	63,855
		575,855

Source : Subba Rao, 1978, p.31.

villages were identified as being without a safe & assured source of drinking water. Of these, some 90,00 were classified as scarcity & difficult villages and another 62,000 as health problem villages (Table 2 (b)).

Table 2 (b) : PROBLEM VILLAGES (1971-72)

		NUMBERS	POPULATION (1971) (million)
(a)	Villages with water sources more than 50' deep and more than 1 mile distance.	91,181	74.8
(b)	Cholera endemic villages	33,857	24.1
(c)	Guinea - worm infested villages	3,184	1.8
(d)	Villages with other health problems	24,778	21.9
	Total :	153,000	122.6

Source : Subba Rao, 1978, p.32.

In the Fifth Plan (1974-79) rural water supply was made an integral component of the Minimum Needs Programme. As a result of larger allocations, about 95,000 problem villages had been provided with safe drinking water supply facilities by March 1980.

However, various State Governments have reported that the earlier (1971-72) survey did not adequately assess the magnitude of the problem, partly because the survey was incomplete and partly because the subsequent drought conditions had highlighted fresh areas which were vulnerable to water scarcity. According to the estimates of the State Governments, as on 1.4.80, some 1.90 lakh villages in the country needed to be provided with water supply facilities on a priority basis (as they constitute 'problem' villages). Thus, a fair assessment of the nature of the problem has become available only at the end of the Fifth Plan period.

The schemes executed so far have consisted of both piped water supply schemes and tubewells with handpump schemes in rocky areas; hand pump schemes in coastal and plain areas; and protected sanitary wells in rocky strata. The type of water supply system required varies from state to state and often from one area to another within a State. See Table II, Chapter III of this volume, for the allocations in the Sixth & Seventh Plans for rural water supply in the States & Central sectors.

According to the Sixth Plan document, poor maintainance of existing water supply systems continues to be a source of concern in most states. Lack of involvement of the local community in the maintainance arrangements, shortage of staff and inadequate funds are the main reasons for the failure of existing water supply schemes to yield the expected benefits.

Urban Sewerage & Sanitation

The provision of water supply system must be complemented by proper waste disposal in order to eliminate communicable diseases. In 1947 roughly three per cent of the population, concentrated in 23 out of a total of 48 cities having a population of over a lakh (class I), was served by a sewerage system. Out of these 23 cities, 12 cities were only partially sewered. (19)

The progress since the Environmental Hygiene Committee Report (1949) has been very slow. Most of the human wastes continue to be discharged untreated into water sources: sewers & water mains run side by side and raw sewerage through leaks, can get sucked into the water mains when the pressure is low. According to the chief water analyst of Tamil Nadu, 96.5 per cent of the samples collected in Madras showed faecal contamination. (20)

According to the Sixth Plan document, at present out of the 3,119 towns in India, only 198 have been provided with full or partial sewerage & sewerage treatment facilities. Even in respect of class I cities having a population of one lakh & above, only 46 per cent have these arrangements. Thus, some 20 per cent of the urban population is covered by a sewerage system. (21)

Conservancy System :

Evenamong the towns that have a sewerage system, many are partially sewered. A parallel conservancy system has to serve the bucket privies in the unsewered areas of these sewered towns. The existence of a large number of bucket laterines, the unhygienic manner in which the nightsoil is collected and conveyed & the uncontrolled methods used for its disposal, are some of the root causes for the high prevalence of gastro-intestinal, diahrrhoeal & parasitic infections in the urban areas. Further, the hand collection & head-carriage of night-soil by down-trodden human beings is a slur on human dignity. The Report of the Backward Class Commission (1956) was the first to highlight the miserable conditions of scavengers ('bhangis'). The Malkani Committee Report recommended elimination of mannual handling with the welfare objective of "Bhangi Mukti". It also stressed 'cleaner' operation through the provision of gloves, gumboots, collection implements, covered buckets and wheel barrows. (22)

The most satisfactory system to deal with the above conditions is the provision of flush laterines (with adequate water supply), extension or

---

(19) GOI, 1949. Cited in Subba Rao, 1978, p.11.

(20) Mankad, 1986, p.1.

(21) GOI, Planning Commission, 1981, p.400.

(22) Subba Rao, 1978, p.38.

provision of new underground sewerage system and disposal of sewerage after treatment. This is hard to achieve in all towns & cities in the forseeble future as urban water supply & sewerage schemes are highly capital intensive. The Sixth Plan document focuses attention on the needs of smaller & medium size towns which have been neglected in the past. The UNDP Global Project in India is based on low cost appropriate technologies for sanitation in smaller towns. It is intended to assist & promote the installation of water-seal laterines with on-site disposal of human waste in 110 towns in seven states, viz. Assam, Bihar, Gujarat, Maharashtra, Rajasthan, Tamil Nadu & U.P. (23). Pioneering work has been carried out by social organizations such as Safai Vidyalaya in Gujarat, Sulab Shauchalaya Sanstan in Bihar, and the RCA Project at Poonamallee, Madras, in the conversion of dry laterines into water seal sanitary laterines. (24)

However, a large percentage of households, lacking any laterine, still remain to be covered by a programme for hygienic disposal of night soil in the urban areas. A survey conducted by the National Sample Survey (NSS) organisation in 1973-74 (25) revealed that 33.3 per cent of urban households (7 million out of a total of 40 million) had no laterine whatsoever and used open ground for defecation. Another one-third had unsanitary bucket service laterines. Out of the remaining 33.3 per cent, 7.2 per cent had flush laterines connected to sewer systems, 21 per cent shared community flush laterines and 5.7 per cent had the use of septic tank laterines.

Disposal Of Solid Waste:

Refuse is defined as the solid or semi-solid wastes, other than sewerage, (26) occuring through the activity of a community. In most cities there are open rubbish dumps that are easily accessible to flies, insects & animals. The common method of disposing refuse generated in homes, restaurants, markets & other public places, is to indiscriminately dump it on adjoining land or in some low-lying areas. Besides refuse, the night-soil collected from unsewered areas is also disposed of in the same ground either by trenching or composting, giving rise to the danger of epidemics. Most towns have some organisation for collection, transportation & disposal of waste, but these suffer from shortage of funds, inadequate transport facilities, bad management & lack of public co-operation.

The first ever survey to assess the existing condition and to characterise the nature of refuse was conducted in Calcutta in 1970. Subsequently, surveys have been conducted in major cities & towns like Bombay, Ahmedabad, Nagpur, Bangalore, Madras & Calcutta Metropolitan District Areas. These surveys show a wide variation in the nature & characteristic of the urban waste. (27)

---

(23) GOI, Planning Commission, 1981, pp. 400-401.

(24) B. Pathak, Sulabh Shauchalaya, A Study of Directed Change, (Patna : Amola Press & Publications, 1982).

(25) Sarvekshana (Journal of the NSSO, GOI), Vol.1, No.2, October 1977. Cited in Subba Rao, 1978, p.36.

(26) K. Kawata, Environmental Sanitation in India, (Lucknow: Lucknow Publishing House, 1967), p.123.

(27) Subba Rao, 1978, p.51.

In the pre-Independence period the Ministry of Agriculture had, in 1945, initiated a scheme for local bodies to practice composting & supply manure to local agriculturists. In the Fifth Plan period, another scheme to set up mechanical composting plants in 35 municipal towns & cities was jointly launched by the Ministry of Agriculture & the Ministry of Works. About 4.8 million tonnes of compost are produced annually at present, against an estimated potential of 10.8 million, indicating the need to expand urban compost production in this country. (28)

Rural Sanitation

In the relatively sparsely populated rural areas, with wide variations in economic development, soil, climate, physiography, culture, attitudes & customs, formal waste disposal systems are practically non-existent. Laterines are rare - open fields, backyards & paths are used for defecation. In addition, night soil is directly used as fertiliser which contaminates the food crops.

In the past several expert committees had stressed the need for an integrated water supply & sanitation programme, yet rural sanitation remains the most neglected programme so far. The promotion of sanitary laterines for rural households falls under the preventive health care & social welfare programmes of the primary health centres (PHCs) & the community development blocks. (29) Yet according to the Sixth Plan document, "... little attention has been given to the problem of rural sanitation except for some pilot projects in a few states. It is estimated that almost 98 per cent of the rural house-holds do not have any laterines. Keeping in view the present position of rural sanitation & the limitation of budgetry resources sanitation facilities can be provided to only 25 per cent of the rural population by the end of the (UN sponsored) Decade". (30)

The following are some of the important pilot projects under taken by various organizations - (31)

(a) Research cum Action project undertaken by the Ministry of Health & assisted by the Ford Foundation, at three centres, viz. Singur, Najafgarh & Poonamali, during 1957-60.

(b) A WHO aided pilot project on environmental sanitation in rural area was carried out by the Public Health Engineering Department of Kerala in 1957-58. Subsequently some extension projects are being carried out in the States of Madras, Kerala, Uttar pradesh & Maharashtra.

(c) An extension project with an integrated rural development approach was undertaken by Andhra Pradesh at Kareem Nagar in collaboration with the National Environmental Engineering Research Institute.

---

(28) Ibid, p.53.

(29) Ibid, p.42.

(30) GOI, Planning Commission, 1981, p. 399.

(31) Subba Rao, op.cit., p. 43-44.

Waste Disposal in Rural Areas :

Waste disposal in rural areas had received little or no attention so far. Besidés human excreta, the present unsatisfactory method of disposing far. Besides human excreta, the present unsatisfactory method of disposing animal dung and urine, cattle house sweepings, etc. leads to unclean surroundings and fly nuisance. A scheme to produce energy from waste was first initiated by the Khadi Gramodyog. It involved bio-gas plants, utilisingcattel dung, & in some places human excreta, to produce methane gas and supply energy to rural households for cooking purposes. The digested sludge from the gas plant also forms an enriched soil-conditioner. However, the cost of a household bio-gas plant is not within the reach of the poorer sections of the rural population. The Integrated Rural Development Programme aims to develop public utility services like the supply of safe drinking water & safe disposal of human excreta. (32)

B WATER POLLUTION

Pollution of rivers, streams, lakes, estuaries, surface waters, etc. have various origins. Contamination occurs when (a) metals and other airborne particulates settle out on sources of water supply; (b) chemicals applied to crops as fertilizers and biocides are washed off into water sources; and (c) potentially toxic substances enter water sources in sewage or industrial discharges. (33)

River Water Pollution in India

Excluding ground water sources that still need to be tapped, surface flow represents 97 per cent of the available water in India. According to the Sixth Plan document, (34) "The 14 major rivers in India carry, among themselves, 85 per cent of the surface run off, cover 83 per cent of the country within their drainage basins and house about 80 per cent of the population in their basin area. Together with other medium and minor rivers, lakes, tanks etc., they provide for our fresh water needs. ... There is now a wealth of documented evidence of the adverse effects of water pollution from all over the country. These range from the transmittal of waterborne diseases like cholera, jaundice, typhoid & dysentry to fish kills and loss of agricultural productivity through the use of polluted water. From the Dal lake in the North, to the Periyar & Chaliyar rivers in the South, from the Damodar & Hoogly in the East to the Thana creek in the west, the picture of water pollution is uniformly gloomy. Even our large perennial rivers like the Ganga are today heavily polluted".

Untreated municipal wastes and highly toxic industrial effluents are the major sources of river pollution in India. There is extensive documentation on the pollution condition of the major rivers, (35) & a few examples will illustrate the situation. The Yamuna river, in its 48 km

---

(32) Ibid, pp. 46-47.

(33) UNEP, The World Environment 1972-82, National Resources & the Environment Series 8. (Dublin : Tycooly International, 1982).

(34) GOI, Planning Commission, 1981, p.346.

(35) Centre for Science & Environment, The State of India's Environment 1982. A Citizens' Report, (New Delhi: CSE, 1982). See Chapter 2 on Water, pp. 17-30.

portion through Delhi, picks up nearly 200 million litres of untreated sewage and 20 million litres of industrial effluents, including about half a million litres of DDT wastes, through seven major open drains. The sewage treatment plants are capable of treating, fully or partially, only 46.4 to 50 per cent of Delhi's wastes. Studies carried out by the Central Board for Prevention and Control of Water Pollution reveal that the river near Agra is polluted 20 times more than at its point of entry into Delhi; the section of the Yamuna downstream from the point of the Najafgarh drain (responsible for 54 per cent of the total drain flow) upto Okhla, has been placed in the 'E' category, i.e. it is not even fit for irrigation. (36)

A study by the Institute of Sciences, Bombay, in 1980 revealed that the Kalu river, flowing through the industrial suburbs of Amarnath, Ulhasnagar & kalyan in north-east Bombay and emptying into the Thane creek, had mercury concentrations far above the permissible levels. Mercury poisoning, from eating fish that had accumulated methyl mercury, was responsible for the death & maiming of almost 300 persons at Minamata & Niigata in Japan in 1953. (37) Mercury enters the food chain through contaminanted fish, or cattle that graze on plants in shallow water. The study investigated a 10 km. stretch between Ambivali & Titwala, receiving toxic wastes from a rayons factory, a paper mill, a dye factory & a chemical plant. It found mercury levels between 1.6 and 20 ppm (parts per million) when permissible levels as per WHO standards for human consumption is 0.5 ppm. Also, blood samples of villagers near Ambivli, revealed levels ranging between 14 ppm and 55 ppm when the normal is 1.5 ppm. The consequence has been a higher mortality; also most affected villagers had an impaired central nervous system, maiming them for life. (38) More recently, Maharashtra Government set up the A.K. Ganguly committee (September 1986) to study the pollution levels in the Bhatsai river, one of Bombay's main sources of potable water. The report, submitted on February 4, 1987, confirms the fact the industries located within the rivers catchment area are discharging toxic effluents like hydrochloric acid, caustic soda, carbon tetrachloride, benzene, tolvene, cadmium, chromium, nickel, etc. into the river, and that the fiteration plant is not designed to remove these contaminents nor is there any fool-proof method to deal with them. The committee recommended relocation of the polluting industries. However relocation without stringent pollution control and environmental planning is no slution. "In fact, when industry is located in so-called backward areas there is tendency on the part of the pollution control authorities to relax implementation of standards specifying the levels of emission or discharge of pollutants and an inclination on the part of industry not to invest adequately on pollution control equipment". (39)

Organic & inorganic chemical industries generate both liquid & solid wastes that are treated very inadequately before disposal. Generally the industry neutralises the toxic waste water from the plants with lime and the neutralised liquid effluents, which are still highly toxic, are discharged

---

(36) GOI, Dimensions of Water Pollution Problems in India, (New Delhi : Department of Science & Technology, 1978); CSE, 1982, p.28.

(37) WHO, Environmental Health Criteria: 1.2 Mercury, (Geneva : WHO, 1976).

(38) Article appeared in the Daily, 17 May, 1981; CSE, 1982, p.22.

(39) "Threat to Bombay's Water Supply", Economic and Political Weekly, No.17, April 25, 1987, pp. 728-729.

Table III : SELECTED CHEMICALS & ASSOCIATED HEALTH HAZARDS

	USE	HAZARD
Acrylonitrile	Acrylic fibres/synthetic rubber plastics.	Highly toxic/carcinogenic/ teratognic.
Arsenic	Pesticides/Unanic medicines/glass	Toxic/dermatitis/muscular paralysis/damage to liver & kidney/ possibly carcinogenic & teratogenic.
Benzene	Octane number of gasoline/ manufacture of many chemicals	Leukemia/chromosomal damage in exposed workers/behavioural changes.
Beryllium	Aerospace industry/ceramic parts/ household appliances.	Fatal hung disease/heart & hung toxicity.
Cadmium	Electroplating/plastics/pigments/ supenphosphate fertilisers	Kidney damage/emphysema/possibly carcinogenic, teratogenic & mutagenic
Chlorinated organics (DDT, BHC, etc.)	Pesticides/Fumigeint	Depression of central nervous system/possibly carcinogenic
Chromates	Tanning/paints/pigments/corrosion inhibition/fungicides	Skin ulcers/kidney inflamation/ possibly carcinogenic/toxic fish.
Lead	Pipes/storage batteries/paints/ printing/plastics/gasoline additive	Intoxicant/neurotoxin/affects blood system
Manganese	Mining/welding/dry cell battery/ ferromanganese	Nervous damage/damage to reproductive system
Mercury	Chloralkali cells/fungicides/ Pharmaceuticals.	Nervous damage/kidney damage
Polychlorobiphenyls	Transformers/insulation of electricity	Possibly carcinogenic/ nerve skin & liver damage.
Sulpher dioxide	Suger/bleeding agent/pollution from coalbased power stations	Irritation to eyes & respiratory system/damage to plants & monuments.
Urea	Fertiliser	Bronchical problems/kidney damage
Vinyl chloride	Plastics/organic compounds synthesis.	Systematically toxic/carcinogenic

Source : C.R. Krishnamurti, Toxic Chemicals. The State of India's Environment : Some Aspects, New Delhi 1982. In CSE, 1985, p.200.

into rivers & ponds. The sludge & other solid & semi-solid wastes are disposed off on fallow public land which pollutes both ground & surface waters. (40) Table III shows the health hazards associated with selected toxic chemicals that need to be stringently regulated.

The primary water pollution control legislation in India is the Water (Prevention & Control of Pollution) Act of 1974, which aims at the "the prevention and control of water pollution and the maintaing or restoring of wholesomeness of water". Prior to this national act, only two States, Maharashtra & Orissa, had pollution control legislation. The Act provides for state boards for the prevention & control of water pollution (now often called pollution control boards or PCBs) to enact & enforce effluent (emission) standards for factories discharging pollutants into bodies of water. The apex body is the Central Pollution Control Board, which assists and guides the State boards. The Central PCB has promulgated minimum national standards (MINAS) for water pollution for ten industries. Under the industries (Development & Regulation) Act of 1951, the granting of a letter of intent (LOI) by the government leading to a full-fledged industrial licence, requires "no objection certificate" (NOC) from the state PCB specifying the particular pollution control methods to be used in the factory. However enforcement of controls & standards has been sporadic & uncertain. (41)

3. HOUSING

Ill-maintained, poorly ventilated and cramped residential surroundings are responsible for the rapid spread of infectious diseases, particularly respiratory diseases and tuberculosis. Accidents associated with poor housing conditions, such as broken stairs & ill-paved yards, are a leading cause of death, mainly among women, children & the older age groups. Unsatisfactory home environment in crowded conditions is also responsible for mental disorders & psychiatric problems.

Table IV (based on data collected by the Central Statistical Organisation in 1975) indicates the conditions prevailing in India's housing sector. It is evident thateven housing classified as "fairly good" lack piped water supply, electricity and toilets of any kind, i.e. over 89 per cent of India's household population lives in conditions which does not fulfil their basic needs.

Housing Shortage

The backlog in urban housing in India in 1971 was 3.8 million dwelling units, and this backlog is estimated to have risen to 5.01 million by 1980. Rural housing shortage is estimated to have increased from 11.8 million in 1971 to 15.1 million in 1980 (Table V (a)). The all-India annual growth rate of housing stock, which was 1.5 per cent between 1971-80 (Table V(b)), has lagged considerably behind the 4.3 per cent annual growth of housing shortage backlog in the same period.

---

(40) Centre for Science & Environment, The State of India's Environment 1984-85. The Second Citizens' Report, (New Delhi : CSE, 1985), p.199.

(41) For a review of the industrial pollution policy in India, & the problems of enforcement of pollution controls, see Susan G. Hadden, "Statutes and Standards for Pollution Control in India", Economic & Political Weekly, No.16, April 18, 1987, pp. 709-720.

Table IV : CONDITION OF STRUCTURE AND FACILITIES AVAILABLE TO HOUSEHOLDS IN URBAN & RURAL INDIA

	URBAN	RURAL	ALL INDIA
1. Households in 1971 census (in million)	19.12	77.94	76.06
2. Percentage living in houses :			
(a) Excellent	18.3	6.6	8.9
(b) Fairly good	63.3	66.0	65.6
(c) Bad & Dilapidated	18.4	27.4	23.6
3. Age of houses in years :			
(a) 0 - 5	31.3	15.9	18.9
(b) 5 - 10	10.0	14.6	13.7
(c) 10 - 20	46.8	23.3	22.1
(d) 20 - 40	21.9	21.2	21.3
(e) 40 & above	20.0	23.0	24.0
4. Percentage of houses having :			
(a) i - Piped water inside	26.6	0.4	3.6
ii - Piped water outside	30.6	2.2	7.8
(b) Electricity	27.9	1.0	6.3
(c) Bath	33.1	7.9	12.9
(d) i - Toilet of any type	34.0	3.8	13.7
ii - Flush Toilet	12.4	0.1	2.5

Source : GOI, Ministry of Planning, Statistical Abstract India - 1975, (New Delhi : Central Statistical Organization, 1976).

Table V (a) : HOUSING SHORTAGE BACKLOG

		HOUSING SHORTAGE BACKLOG (ALL INDIA) (IN MILLION)	ANNUAL COMPOUND RATE OF GROWTH OF HOUSING SHORTAGE BACKLOG (1974-80)
1974	All India	15.6	
	Urban	3.8	All India - 4.3%
	Rural	11.8	
			Urban - 4.6%
1980	All India	20.1	
	Urban	5.01	Rural - 4.3%
	Rural	15.1	

Source : GOI, Ministry of Planning, 1976, p.37.

Table V (b) : ANNUAL COMPOUND RATE OF GROWTH OF HOUSING STOCK

All India	1.5%
Greater Bombay	3.8%
Madras	6.0%
Bangalore	2.7%
Delhi	6.1%

Source : Raj Mulkh, "Housing, Finance and the Urban Poor", Urban India, Vol.I, No.2, Dec. 1981, p.36.

A report on housing financed by the RBI in 1978 estimated that, in order to eliminate backlog & meet fresh demand as well as replace dilapidated structures, 5.59 million houses in the rural areas and 1.53 million houses in the urban areas were required to be built every year for the next 20 years. (42) This is naturally much more than the present investment in housing can handle. According to the estimates of the National Building Organization, only three lakh houses in the villages and six lakh houses in the cities can be constructed annually, i.e. one dwelling unit is being constructed where seven are needed. By 2001 A.D. the housing shortage figure is expected to reach 65.6 million. (43)

A. Urban Housing Conditions & Slums (44)

Some 82 per cent of Bombay's population lives in one-room units, including slums. Of these 1.5 million live in chawls with common toilet facilities. A shortage of 55,000 housing units is added every year to a previous backlog of 800,000 houses. Bombay's housing crisis has been compounded by the rapid deterioration of its old housing stock. According to a survey by the Bombay Municipal Corporation, some 11,000 buildings, housing 15 per cent of the population, are on the verge of collapse, while another 20,000 have a remaining lifespan of only five to 15 years. The result has been the massive growth of slums, while 100,000 people are living on the pavements.

In Calcutta, slums house 3.6 million people, i.e. 40 per cent of the metropolitan population. According to the Calcutta Metropolitan Development Authority (CMDA), two-thirds of the population lives in "Katcha" (temporary) buildings and more than 57 per cent of families have only one room to live in. In Madras, nearly 400,000 houses are decrepit, amounting to half the city's housing stock. Some 30 per cent of the inhabitants are slum-dwellers. (45) Ahmedabad, Pune, Kanpur, New Delhi have all experienced the proliferation of slums & unauthorised colonies. (46)

Private & public residential construction has largely met the housing needs of the rich & the middle class. The housing schemes of the government, according to M.N. Buch, Director, National institute of Urban Affairs in New Delhi, have generally benefited people in the organised sector, with steady incomes or reserves to fall back upon to enable them to pay the instalments of the housing boards. According to a World Bank study, 64 per cent of the households in Madras and 63 per cent in Ahmedabad could not afford a house even at Rs. 5000/- :the cheapest that the public sector can provide. (47)

---

(42) Reserve Bank of India, Report of the Working Group to Examine the Role of Banking System in Providing Finance for Housing Scheme, (Bombay : RBI, 1978).

(43) K. Shah, "People's participation in housing - Why & How?", Urban India, Vol.1, No.2, 1981, p. 9.

(44) CSE, 1982, pp. 94-95; CSE, The State of India's Environment 1984-85: The Second Citizen's Report, (New Delhi : CSE, 1985), pp. 138-154.

(45) "Too little & Too slow", Hindu, Madras, January 26, 1982; see also K.S. Latha, "Feverish rise in urban land and building prices", Financial Express, July 27, 1981.

(46) See CSE, 1982 and 1985.

(47) World Bank, Housing Sector Policy Paper, (Washington DC : World Bank, 1975).

Table VI : SLUM POPULATION GROWTH IN SOME MAJOR INDIAN CITIES

METROPOLITAN CITY	YEAR	POPULATION OF CITY (MILLIONS)	SLUM POPULATION (MILLIONS)	% SLUM POPULATION.
Calcutta	1974	3.19	1.44	45.00
	1981	9.16	3.24	35.35
Greater Bombay	1976	7.94	3.25	41.00
	1981	8.23	4.20	51.03
Delhi	1977	5.29	1.32	25.00
	1981	5.71	3.02	53.00
Madras	1977	2.47	0.99	40.09
	1981	4.27	1.36	31.86
Hydrabad	1977	1.99	0.40	20.00
	1981	2.52	0.54	21.28
Ahmedabad	1976	1.89	0.42	22.00
	1981	2.51	0.66	26.16
Kanpur	1976	1.33	0.56	41.98
	1981	1.68	0.68	40.34

Source : GOI, Planning Commission, Task force on Housing and Urban Development, Vol.IV. Cited in CSE, 1985, p.148.

The public sector housing programmes for urban areas have included social housing schemes for the Economically Weaker Sections (EWS) with income below Rs. 350 per month, and for the Low Income Group (LIG) with incomes between Rs. 350 to Rs. 600 per month. All schemes, except the subsidised housing scheme for plantation workers, are under the state sector though monitored by the Ministry of Works & Housing. The role of the Centre is limited to drawing up broad principles and rendering financial assistance in the form of loans and subsidies to the State Governments and Union Territories. (See Table VII for Sixth & Seventh Plan allocations for the housing sector).

There are also a number of public financial institutions which give loans and other financial assitance to housing co-operatives, individuals, and State Housing Boards. These include the Housing & Urban Development Corporation (HUDCO), the Central & State Housing Finance Agencies, Provident Fund organizations, the Housing Development Finance Corporation Limited (HDFC), the Life Insurance Corporation (LIC) and the General Insurance Corporation (GIC). (48) The State Governments, additionally, extend funds through their own institutions, such as the Delhi Development Agency (DDA) or the Maharashtra Housing & Area Development Authority (MHADA).

Upgrading Slums

Slum clearance and resettlement programmes in India have proved complicated. According to the Sixth Plan, "Such relocation not only involves subtantial hardship to those affected in terms of loss of easy access to employment centres and other amenities, but results in unnecessary

(48) GOI, Planning Commission, 1981, pp.392-393; Subba Rao, 1978, pp.68-69.

Table VII : HOUSING - SIXTH AND SEVENTH PLAN OUTLAYS

SL. NO.	SCHEMES	SIXTH PLAN (1980-85) OUTLAYS	SEVENTH PLAN (1985-90) OUTLAYS
A	States & Union Territories		
1.	Rural house-site-cum construction Scheme (MNP)	353.50	576.90
2.	Social and Departmental housing schemes	837.37	1,276.02
3.	Police Housing Scheme	(a)	315.42
	Total : States and UTs	1,190.87	2,178.34
B.	Central Sector		
4.	Housing & Urban Development Corporation	50.00	60.00
5.	National Buildings Organisation	2.00	4.00
6.	Hindustan Prefab Ltd.	0.05	2.00
7.	General Pool Office & Residential accomodation	142.00	165.00
8.	Plantation Labour Housing	10.00	2.00
9.	Science & Technology	2.00	3.00
10.	Dock Labour Housing	0.20	0.21
11.	CPWD Training Institute	0.50	1.66
12.	House Building Advance	93.25	..
13.	National Housing Bank	..	50.00
14.	International Year of Shelter for the Homeless & International co-operation	..	2.00
	Total : Central Sector	300.00	289.87
	Grand Total : States & UTs & Central Sector	1,490.87	2,458.21

Note : (a) : Included in 2. above.
Source : GOI, Seventh Five Year Plan 1985-90, (New Delhi : Planning Commission, 1985), Table 12.3, p.296.

destruction of existing housing capital, however sub-standard it may be". (49) The new strategy is based on the environmental improvement of slum areas, through the provision of essential services like community water taps and sanitation, paved pathways, surface drainage and electricity. Slum upgrading is also far less expensive than resettlement, and major cities like Madras, Calcutta, Bombay & Delhi have executed a number of slum improvement schemes with World Bank assistance. However the soaring price of urban land makes slum upgradation impossible. Slums are often located on prime real estate and therefore become the target of a policy of slum eviction at the hands of the State Government.

'Sites & Services' Scheme

Public sector assistance is provided for the Economically Weaker Sections (EWS) under the 'Sites & Services' scheme. The beneficiaries are given loans upto Rs. 5000 per unit at highly concessional rates of interest, repayable over a period of 20-25 years, in the expectation that the

(49) GOI, Op.cit, p. 392.

beneficiaries will themselves gradually improve the quality of their accomodation. (50)

B. Rural Housing

A survey conducted by the Institute of Development Studies in Mysore during the mid-70s (51) showed that in many Indian villages nearly half the existing houses needed urgent repairs. Many houses built of traditional materials like mud and thatch had been standing for more than 50 years. In some cases even the straw matting on the roof had been replaced only once or twice in this period. The proportion of houses in the rural housing stock that met the minimum standard was low, and these were invariably the residences of rich landlords & other prosperous local people.

Rural housing was first accorded priority during the Fifth Plan period under the Minimum Needs Programme. The rural housing programme aims at providing house sites, & assistance for construction of houses, for rural landless families. In 1980, an estimated 14.5 million rural families required housing assistance. (52) By March 1985, some 0.72 million landless families still had to be provided with house-sites. This is "due to the fact that in some States the scheme was extended to smaller municipalities, and in some States the beneficiaries included some belonging to the upper income strata of the rural community". However only 1.9 million families had received construction assistance. (53)

4. AIR POLLUTION AND NOISE POLLUTION

A. Air Pollution

In India, as in the industrialised west, air pollution arises from both industrial production and automobile exhaust, and from domestic burning of non-commercial fuels, including wood, cowdung, agricultural wastes, etc. Table VIII lists the common sources and environmental effects of some major pollutants.

Air pollution mainly acts as an irritant affecting the respiratory tract and thereby causing rhinitis & cough. The immediate effects on human health range from loss of alertness and marked lassitude to irritation of the eyes and throat, and acute aggravation of respiratory illness such as asthma, bronchitis, tuberculosis and emphysema. The long-term effects could include a higher incidence of cancer. (54)

---

(50) GOI, Planning Commission, Seventh Five Year Plan 1985-90; (New Delhi : Planning Commission, 1985), p.

(51) Cited in CSE, 1982, p.106.

(52) GOI, Planning Commission, 1981, p.391.

(53) GOI, Planning Commission, 1985, p.294.

(54) Bronchitis may be caused by a virus through cold or influenza but atmospheric pollutants and cigarette smoking aggravate the disease to make it chronic, and it may result in shortness of breath leading to emphysema. Emphysema is a disease in which the lung sacs or alveoli lose their elasticity, so that the lungs cannot completely exhale air, resulting in a greater carbon dioxide content in the blood and consequent strain on the heart. Cigarette smoking is a major cause of emphysema. See C. Darner et.al., Infectious Diseases, (Massachusetts : Harvard University Press, 1968).

Table VIII : SELECTED ATMOSPHERE POLLUTANTS

POLLUTANT	PRINCIPAL HUMAN SOURCES	EFFECTS	REMARKS
CARBON DIOXIDE	Fuel combustion for heating, transport, energy production.	No direct effect on people. Over time, may lead to increase in earth's temperature.	Normal constitutent of atmosphere. Essential to plant life.
CARBON MONOXIDE	Incomplete fuel combustion (as in motor vehicles).	Deprives tissues of oxygen. with cardio-respiratory diseases more sensitive	Contribution of natural sources small. Smoking more significant for humans than exposure to traffic.
SULPHUR DIOXIDE	Burning of sulpher-containing fuels like coal and oil.	Combined with smoke, increase risk and effects of respiratory diseases. Causes suffocation, irritation of throat and eyes. Combines with atmospheric water vapour to produce acid rain. Reduces crop yields. Leads ti acidification of lakes and soils. Corrodes buildings.	
SUSPENDED PARTICULATE MATTER	Smoke from domestic, industrial and vehicular sources.	Possible toxic effects depend on specific composition. Aggravates effects of sulphur dioxide. Reduces sunlight and visibility. Increases corrosion.	Chemically, a most diverse group of substances. Natural sources include dust-storms, volcanic eruptions and sea-spray.
OXIDES OF NITROGEN	Fuel combustion in motor vehicles and furnaces. forest fires.	Possible increase in acute respiratory infections and bronchitis morbidity in children. Produces brown haze in city air. Causes corrosion.	Nitogen oxide and nitrogen dioxide are the two components.
VOLATILE HYDROCARBONS	Partial combustion of carbonaceous fuels, industrial processes, disposal of solid wastes.	React with other pollutants to produce eye irritants (acrolein, aldehydes). Ethylene is harmful to to plants. Aerosol particles reduce visibility. May produce unpleasant odours.	
OXIDANTS AND OZONE	Emissions from motor vehicles. Photochemical reactions of nitrogen oxides and reactive hydrocarbons.	Cause eye irritation and impaired pulmonary function in diseased persons. Corrode materials and reduce visibility. ozone is one of the most damaging pollutants for plants.	Mainly derivative: products of atmospheric reactions between other pollutants. Ozone is a natural and essential constitutent of the upper atmosphere.

Source : Preparatory document 48/8, Conference on the Human Environment, Stockholm 1972. Cited in CSE, 1982, p.76.

Major Sources of Air Pollution in India (55)

(i) Thermal power stations : (56) In India these are entirely coal fired. The main effluents are fly ash, soot and sulphur dioxide, although Indian coal is fortunately low in sulphur. (57) The Badarpur and the Indraprastha (IP) thermal power stations are the biggest air polluters in New Delhi. Together they emit 180 tonnes of fly ash and 70 tonnes of sulphur dioxide daily. Thick black smog from the IP station's chimneys coats the surroundings with a layer of soot. The preliminary results of a survey of its workers by the New Delhi Tuberculosis Centre, show that TB incidence among them is about twice the normal levels.

Even smaller cities, such as Bhatinda, and surrounding rural areas with its agricultural land and crops have been severely affected by the fall-out from thermal stations.

(ii) Fertiliser factories : (58) The main effluents are fluorine gas, particulates, sulphur dioxide and trioxide from sulphuric or phosphatic acid units and nitrogen oxides, ammonia, hydrocarbons and particulates from nitrogen-based plants. Adequate pollution control systems have not been incorporated in the original designs of most plants. For instance, the Madras Fertilisers Ltd. (MFL) unit releases urea dust into the atmosphere. Large amounts of ammonia are said to leak out from pipelines & storage tanks, causing irritation to the eyes & coughing.

(iii) Textile Mills : (59) The major effluents are cotton dust, smoke & other combustion wastes, kerosene or naptha vapours, sulphuric acid, nitrogen oxides, chlorine, formaldehyde and chlorine dioxide. Areas around mills are usually covered with a thin deposit of cotton fluff or dust, inhaled by mill workers and residents of that area. Continuous inhalation causes byssinosis and weakens respiratory functions.

A detailed study of 4000 people conducted by KEM Hospital and the Air Pollution Prevention Cell of the Bombay Municipal Corporation in 1977-78, compared the health of residents in a clean, western suburb of Bombay like Khar with that of residents of the mill areas of Lalbaug and the Chembur area with its concentration of petro-chemical plants. The residents of the congested industrial areas were found to be sufferring from a much higher incidence of diseases like chronic bronchitis, TB, skin allergy, anaemia and irritation of the eyes. The absentee rate of workers was much higher, particularly in Lalbaug's textile mills and there was 10 to 16 per cent incidence of byssinosis among the mill labourers. There was also a rise in deaths due to cancer in Lalbaug -twice as many as in Chembur or Khar.

---

(55) This section is almost entirely based on the data on 'Atmosphere' (Chapter 5) published in CSE, 1982, pp. 74-82. See also CSE, 1985, pp. 132-136.

(56) Ibid, pp. 74 and 80.

(57) GOI, Planning Commission, 1981, p.346.

(58) CSE, 1982, pp.76 & 80.

(59) Ibid, pp. 76-77 and 79.

(iv) Traffic Pollution : (60) The high density of traffic in Lalbaug, apart from the concentration of mills, was responsible for the frequent colds and coughs, and dyspnoea in the residents, as revealed by the above study. Cancer of the lungs can be linked with benzopyrene levels which are high in Bombay because of a large number of cars.

According to the National Transport Policy Document (1980), there are 3.7 million motor vehicles on the roads. Their exhaust fumes contain carbon monoxide, nitrogen oxides, hydrocarbons, aldehydes and lead oxides. The black smoke of diesel engines contains more particulates than the exhaust of petrol engines, but carbon monoxide hydrocarbons and aldehydes are less. According to Prof. J.N. Dave, New Delhi, automobile emissions in Bombay & Delhi account for 70 per cent of the monoxide, 50 per cent of the hydrocarbons and 30-40 per cent of the particulates in the atmosphere. Carbon monoxide reduces the oxygen carrying capacity of blood. Constant or prolonged inhalation of the gas poses serious threat to people with cardiovascular disorders. Lead is another toxic element present in automobile exhaust. A survey by the National Institute of Occupational Health (NIOH), Ahmedabad, indicated that lead concentration in the blood and urine of policemen and roadside shopkeepers was significantly higher than that of unexposed people. Mandatory emmission standards need to be imposed on vehicle manufacturers and owners.

(v) Cigarette Smoke : (61) One of the most worrying phenomenon in India is the increasing use of bidis and cigarettes. Cigarette smoke is known to contain inorganic pollutants such as carbon monoxide and nitrogen dioxide, and organic ones such as phenols, aldehydes, benzopyrene and acrolene. According to the WHO, 90 per cent of all lung cancer deaths, 2.5 per cent of deaths from cardio-vascular diseases and 15 per cent of deaths due to chronic bronchitis are directly causesd by smoking. Bidi smokers face 10 times the risk of getting cancer than cigarette smokers because bidis contain more poisonous and cancer causing substances per unit weight than cigarettes.

(vi) Domestic pollution : (62) Non-commercial sources of fuel such as firewood and cowdung, used in open 'chullahs' for cooking, are other contributors to air pollution. A survey carried out over 15 years on hospital patients in Delhi sufferring from Cor Pulmonale, found that its incidence in men & women was similar even though 75 per cent of the men as compared to 10 per cent of the women were smokers. In addition, the age of onset in women was much lower. The authors, Dr. S. Padmavati and Dr. S. Arora concluded, "Cigarette smoking is prevalent all over India & must be a contributory cause of bronchitis in men but not in women as only 10 per cent of them smoke. The women are, however, exposed to smoky primitive fire from childhood.....".

Another study in a remote mountain district of Jumla in Nepal also indicated a very high incidence of acute respiratory infection (ARI), which in turn was the most important cause of infant mortality. Out of a total mortality rate of 490 per 1000, 333 deaths were due to ARI. This is one of the world's highest mortality rates, and is partially due to irritation caused by indoor smoke-filled conditions.

---

(60) Ibid, P.77; Mankad, 1976, p.4.

(61) CSE, 1982, p.143.

(62) Mankad, 1986, p.5; CSE, 1985, pp. 123-128.

Legislation

In 1981, the Central Government enacted the Air (Prevention and Control of Pollution) Act. It has many features similar to the Water Pollution Control Act, but unlike the latter, it is a Central Act and therefore all States have to set up air pollution control boards. (63)

B. Noise Pollution.

A survey carried out in 1970 in parts of Delhi by the National Physical Laboratory revealed that noise levels in the city were far above the maximum limits suggested by experts. As against 45 decibels (dB) recommended by Swiss experts, peak levels in excess of 100 dB were recorded in parts of Delhi : Daryaganj was found to have night time levels of 80 dB and the area around the All-India Institute of Medical Sciences had 59 dB. (64) A noise level study conducted by SOCLEEN in crowded localities of Bombay in 1980, found noise levels upto 97 dB during the annual Ganpati festival. Loudspeakers are commonly used at festivals and ceremonies. Factories, automobilies, trains and aeroplanes, religious & social ceremonies are also sources of noise pollution in India. Prolonged exposure to noise levels above 90 dB can cause permanent deafness. Factory workers have shown neurological, digestive and metabolic disorders under such conditions. (65)

5. WORKPLACE ENVIRONMENT

The general environmentallevels of chemical pollutants particulate matter & noise, pose serious health problems for the public, but exposure to them in the work-place is usually much more intense & hazardous. (66) Occupational health hazards are generally classified into two:

(a) toxic chemical agents;
(b) biological & physical agents & conditions, including accidents. (67)

A. Toxic Chemical Agents

Toxic chemical agents consist of dusts, fumes, mists, vapours and gases used in, or arising out of, industrial processes. (68)

DUSTS

The gravest occupational diseases are caused by dust. Dust exposure is intense in the mining, quarrying and mineral processing industry, as also in

---

(63) For an analysis of the legislation, see CSE, 1982, pp. 82-83; CSE, 1985, pp. 347-349; Hadden, 1987.

(64) United News of India, Fact Sheet on Pollution in India, UNI Backgrounder, 4, 12, 1980, New Delhi.

(65) CSE, 1982, p.78; CSE, 1985, pp. 242-243.

(66) P. Ehrlich et.al., Population, Resources, Environment, (San Francisco : Freeman, 1977).

(67) Kawata, 1967.

(68) For a classification of the chemical agents and their definitions, see American Standards Association, Fundamentals Governing the Design & Operation of local Exhaust Systems, (Revised Edition), (New York : USA, 1958).

the fibre-associated manufacturing industry. The diseases are generically known as pneumoconiosis, or lung diseases, and also include silicosis (caused by silica dust), asbestosis (asbestos fibres), byssinosis (cotton dust) and so on.

Pneumoconiosis - is endemic in mines. Dust predisposes a person to tuberculosis. A survey of 11 coal mines with a total of 9,643 workers showed the prevalence rate of all categories of pneumoconiosis at 10.8 per cent, chronic bronchitis at 2.9 per cent, tuberculosis at 7.4 per cent and hookworm infestation at 39.2 per cent. (69) Several studies and reports in the press have exposed the extreme health hazards involved in mining and related work environments. (70)

Silicosis - is caused by dust containing free silica or silicon dioxide. It was first reportedin India from Kolar Gold Fields in 1947. A clinical and radiological examination of 7,653 underground miners with five or more years of service in the Kolar mines, revealed silicosis incidence to be as high as 43.8 per cent. (71) A survey of 321 mica miners from Bihar showed an incidence of 34 per cent, (72) while a study of 227 stone cutter showed a high incidence rate of 35 per cent. (73) An ICMR study of 605 workers in the slate pencil factories of Mandsaur in Madhya Pradesh pointed out that 80 per cent of workers were below the age of 35 years, and very few worked or survived beyond 10 years. The prevalence was highest among the cutters and increased with the duration of exposure. Fifty two per cxent of the workers had dyspnea and 51 per cent showed positive radiological evidence of silicosis. In Mandsaur, Multanpur and Pipalimandi villages there was hardly a man over 40 years, and there was not a single house without a widow. An estimated 5000 workers are faced with early death as there is no effective treatment, nor have preventive measures been undertaken by the industry like dust control and regular medical examination. (74) It is estimated that 21

---

(69) M.N. Gupta, "Occupational Health Research in India", Indian Journal of Industrial Medicine, 15, 130, 1969(a).

(70) Indian Council of Medical Research, Pneumoconiosis due to mica dust inhalation in mica processing industries, (Calcutta : Regional Occupational health Centre (E), 1981); ICMR, Studies on Occupational Health Problem in Coal mining Industry, (Calcutta : ROHC (E), 1982-ongoing study); R. Vishwanathan et.al., Report of Morbidity Survey in Dhanbad and Jharia Coal Fields with special reference to Pneumoconiosis, (Patna : Rajendra Memorial Research Institute of Medical Sciences, 1972); M. Raghav et al, "Health hazards associated with uranium mining in India", Indian Journal of Industrial Medicine, 12, 1966; C.V. Sabnis et al, "Dust in relation to disease and disability", Environmental Health, 7, 1965.

(71) A. Caplan et al, "Pneumoconiosis in Kolar Gold Fields", Proceedings of a Conference on Silicosis, Pneumoconiosis and Dust Suppression in Mines, (Bangalore: Institute of Mining & Metallurgical Engineers, 1967).

(72) Gupta, 1969(a).

(73) R.K. Gupta, et al, "Clinical and radiological studies in silicosis amongst stone cutters", Indian Journal of Medical Research, 60, 1972.

(74) Institute of Occupational Health, Hazards Evaluation in Slate Pencil Manufacturing Industries at Mandsaur (MP), (Ahmedabad : NIOH, 1981).

million workers are exposed to silica dust in the mining, quarrying and mineral processing industry. (75)

Asbestosis - Asbestos fibres deposited in the lungs cause pulmonary fibrosis, leading to respiratory insufficiency and death; in more severe cases, it causes cancer of the air tubes, lungs and the gastro-intestinal tract known as mesothelioma. Asbestos cement factory workers and construction workers face serious hazards. (76) There are around 20 factories employing 7,000 workers, and according to Dr. S.R. Kamat, one-third of these are suffering from asbestosis. (77) Conditions in asbestos mines, such as those in Roro owned by the Birlas, where tribal workers crouch for hours in dingy underground tunnels are even worse. (78) Families of workers are also valuerable, because workers carry home fibres sticking to their clothes.

Byssinosis - poses a hazard for workers in the textile & fibre based industries and the cotton mills. It generally affects those who have been employed for more than 10 years. Even in an advanced stage a byssinotic person cannot be radiologically distinguished from one having chronic bronchitis. (79) A variant of byssinosis, bagassosis, occurs when bagasse fibre, or sugercane dust, is inhaled. (80) Similarly, workers engaged in hemp and coir industries suffer allergic reactions. (81)

Chemicals

The growth of the Indian chemical industry since 1950 has been phenomenal. (82) Yet the occupational hazards associated with exposure to chemical agents in the work place environment, has received scant attention in India. (83) One of the first systematic studies was undertaken by the

---

(75) C.R. Krishnamurthy, Health Implications of Industrial Development, (Lucknow : Industrial Toxicology Research Centre, 1978).

(76) NIOH, Environmental-cum-medical surveillance in the Asbestos Cement Factory, (Ahmedabad : NIOH, on-going study).

(77) Centre for Education & Documentation, Asbestosis : Dust that Kills, (Bombay : CED, 1983); see also CSE, 1985, pp. 234-236.

(78) Ibid.

(79) S.R. Kamat, "Effect of Cotton dust on textile workers", Chemical Age of India, 27, 1976; M.N. Gupta, "Review of Byssinosis in India", Indian Journal of Medical Research, 57, 1969(b); CSE, 1985, p. 236

(80) R. Vishwanathan, Bagassosis, Technical Report of the Scientific Advisory Board of ICMR, (New Delhi : ICMR, 1960).

(81) B.N. Gupta, et.al, "Immunotherapy in hempworkers having respiratory complaints", Archives of Environmental Health, 1978; Regional Occupational Health Centre (Southern), Occupational Health Hazards Among Coir Workers, (Bangalore : ROHC (s), 1981).

(82) See B.B. Sunderesan, P.V.R, Subrahmanyam and A.D. Bhide, "An Overview of toxic & hazardous waste in India", Industry and Environment, Special Issue, 1983.

(83) Krishnamurthy, 1978.

Indian Chemical Manufacturers' Association in 1966, which covered 20,793 workers in 34 small, medium and large chemical factories located in and around Bombay, Calcutta & Madras. The findings clearly showed the gross abuse of the human component in the production process (84).

The Central Labour institute (CLI), Bombay, has over the years investigated the hazards posed by foundries & metal processing, gas manufacture, petroleum & petro-chemicals, fertilizers and DDT manufacturing. A CLI study of three caustic soda plants in Bombay, where cases of mercury poisoning were reported, found the mean atmospheric concentration of mercury to be in excess of the threshold limit. The exposed workers exhibited symptoms ranging from insomnia to loss of teeth and receding gums. (85)

Chemical units manufacturing insecticides & pesticides pose serious hazards due to the frequent leaks of toxic chemicals, (86) and the danger from accidents during storage (and transport) as in the case of the Union Carbide plant, Bhopal. (87) The situation is further complicated by inappropriate & biased studies. (88)

B. Biological & Chemical Agents

Hazardous biological & physical agents have received relatively less attention in the working environment. The biological agents consist of bacteria, fungi & parasite that are able to cause extreme discomfort, disease and even death. Almost any infectious disease maybe acquired in the course of employment, thus becoming an occupational disease. This is especially true for medical personnel. Besides doctors, nurses and laboratory workers, other workers exposed to these hazards are tanners, veternarians, slaughter house employees, zoo and circus attendants, agricultural & municipal workers. (89)

Among the physical agents & conditions hazardous to the worker's health are radiation noise, extreme temperatures and humidity, abnormal air pressure, weight lifting, repeated motions, shocks & vibrations. (90) Ultra-

---

(84) P.V. Thakkar, Report on Medical-cum-Environmental Hygiene Studies in Chemical Industries, (Calcutta: Indian Chemical Manufacturers' Association, 1968).

(85) V.P. Gupta & Harwant Singh, Effects of Exposures to Mercury in Three Caustic Soda Plants in Maharashtra, Industrial Medicine Division Report No.1, (Bombay : CLI).

(86) NIOH study of Hindustan Insecticides Factory in Delhi (1978-79). Cited in CSE, 1985, p.237; Krishnamurthy, 1978.

(87) The Bhopal tragedy has been extensively documented. See sources in CSE, 1985, p.389.

(88) For instance the controversy regarding the Gwalior Rayon Silk Mills (GRASIM) factory at Nagda, Madhya Pradesh. See V.T. Padmanabhan, The Gas Chamber on the Chambal, (PUCL-Madhya Pradesh, June 1983). The official study was by H.S. Brar et al, Occupational Health Studies in the Staple Fibre Plant of Gwalior Rayon, (CLI, August 1983). See also Padma Prakash, "Environmental Studies. Identifying Bias in Establishment - Generated Research". In CED-MFC, 1986.

(89) R.J. Vakil (ed), Text-Book of Medicine, (New Delhi : Association of Physicians in India, 1973).

(90) Kawata, 1967.

violet radiation emitted during arc welding can damage the eyes & skin. Visible light can affect health in two ways : poor illumination can lead to accidents, whereas glare can cause eye fatigue & visual interference. Foundry workers handling molton metals are exposed to infraed rays, which can cause eye damage besides increasing body heat. Exposures to high level of ionising radiation can cause severe burns, blood dyscrasias, gastro-intestinal symptoms, cataract, cancer & gene mutations. Nuclear thermal plants, nuclear reactors, heavy water complexes have serious implications for the health of the workers.

Noise is a psychological & physical health hazard for the worker employed in boiler making, aircrafts, motor garage, blacksmithy, weaving industry, rivetting, blasting & metal working trades, rock drilling and lathe operating. Besides causing permanent deafness and rupture of the ear drum, the harmful effects include increased annoyance, mental tension, irritability and emotional disturbances. The textile mills are some of the noisiest workplaces in the country.

Exposures to high temperature can upset the homeostatic balance mechanism in the body and can cause circulatory disturbance and heat exhaustion. Furnace & foundry workers, metal casters, iron and glass workers, miners and those working in the steam press shops in rubber industry are exposed to this hazard, since a furnace is used in a variety of industries including coal tar melting for road laying purposes, and steam engine, metal and metal based industries. High temperature can also cause apathy, lassitude & sleeplessness.

Workers who lift heavy loads, as in many factories, at the docks or on railway platforms, are easy victims of various diseases of the bones and joints, strangulated hernia and vericose veins. However, this aspect of occupational health, as also many non-industrial occupations (drivers, policemen, agricultural labourers, etc.) women domestic workers have received scant attention. (91)

Accidents

Accidents, the most serious among occupational hazards, have received greater attention than other occupational diseases, primarily because of its visible manifestations. However, even here there is gross under reporting. Official data probably lists no more than 20 per cent of the total number of fatalities and accidents. The large number of workers in small units, i.e. units with less than 20 persons and using electricity, or units with less than 10 persons and not using power, are excluded from the purview of the Factories Act, 1948, and the Employees State Insurance Act (ESIA), 1948. Thus, workers in small "sweatshops" all over the country, construction workers and those contracted by outside agents within large units are not protected by the existing legislation. (92)

Unguarded machines & work spaces are the primary causes of accidents. Flying & falling objects, explosions, fires & structural collapses add to

---

(91) See the sections on Transport Workers and Farm Workers in CSE, 1985, pp. 244-45. For the health of poor labouring women see the special issue of the FRCH Newsletter, September-October 1987, Vol.I, No.6.

(92) For example, see S.H. Clark et al, "Plight of Agate Workers in Gujarat", Science Today, December 1982; Bharat Dogra, Occupational Hazards, (Bombay : Build Documentation Centre, 1985).

the toll. Factors which lower workers' concentration are night shifts, double shifts, high heat & noise conditions, poor lighting, vibrations and high work speeds. (93)

The textile industry's share of accidents is disproportionate to the number of people it employs. It accounts for 56.32 per cent of accidents but employs only 23.62 per cent of the industrial labour force (Table IX). According to a survey by the Union Labour Ministry, (94) the disturbing rise in absenteeism among Bombay's textile mill workers is partly due to the

Table IX : PERCENTAGE DISTRIBUTION OF FATAL AND NON-FATAL INJURIES AND AVERAGE DAILY EMPLOYMENT BY INDUSTRY (REGD. FACTORIES FOR THE YEAR 1978 (EXCLUDING MINING AND CONSTRUCTION)

	INJURIES		AVERAGE EMPLOYMENT	
	NO.	% OF TOTAL	NO.	% OF TOTAL
Textile	1,93,503	56.32	15,45,000	23.62
Metals	47,110	13.71	10,05,000	15.37
Transport Industry	20,913	6.09	3,97,000	6.07
Machinery	21,839	6.35	4,72,000	7.22
Chemicals	12,449	3.62	4,28,000	6.55
TOTAL	3,43,611	100.00	64,69,000	100.00

Source : Nair, R.R., Central Labour Institute, Bombay.

greater number of accidents they suffer. The fact that over 55 per cent of all recorded industrial accidents occur in the textile units, points to the lack of adequate safeguards. Furthermore, the 'badli' (casual) workers recruited to fill any temporary vacancy (in many mills they are the majority workers) are put on the job with little or no training; the accident rate among the latter is much higher than among the permanent workers. Mines and quarrying, and metal and engineering industrial units are the other industries accounting for the major proportion of industrial accidents.

However statistics on occupational injuries are available for only a fraction of the organised industry, covering approximately 3.3 per cent of the total work force of 230 million (including agricultural workers). (95) According to official statistics, during 1965-75, over 2.5 lakh workers were injured and 5,000 workers lost their lives. The total number of industrial accidents rose from 2.4 lakh in 1975 to 3.5 lakh in 1980. (96) The overall frequency rate of accidents in industrial units is 68.9 per 1000 and the fatality rate is 0.16 per 1000. (97)

(93) Sagar Dhara, "Bhopal Can Happen Again", The Indian Express, December 23, 1984.

(94) Article appeared in the Economic Times (Bombay), 31 July, 1982.

(95) Indian Express, op. cit.

(96) Economic Times, 1982, op. cit.

(97) R.R. Nair, CLI, Bombay.

Three acts touch upon different aspects of occupational health : Factories Act, 1948; Employees State Insurance Act (ESIA), 1948; and the Workmen's Compensation Act (WCA), 1923. The Factories Act lays down provisions for the general health of workers by prescribing detailed instructions regarding cleanliness, disposal of wastes, ventilation and temperature, dust & fumes, artificial humidification, overcrowding, lighting, drinking water, and laterines. Safety regulations are also dealt with, such as fencing of rotating parts, provision of alarm & proper escapes, etc. There are 24 notified diseases; any incidence of these among the employees must be reported to the chief Inspector of Factories by the attending medical practitioners. The Factories Act requires that each State should have a Chief Inspector of Factories, the primary enforcing authority. Working under the Chief Inspectors are certifying surgeons and inspectors, including medical inspectors. Certifying surgeons examine all factory workers, and supervise the diagnosis & treatment of occupational diseases. They are also responsible for determining the health hazards of any new substances used on the shop floor or in new manufacturing processes. However, states suffer from inadequate staff, while records of illnesses associated with occupational conditions are rarely maintained by factories. In effect, non-detection for want of competent examination and careful monitoring is being interperted as non-existence of occupational diseases. (98)

---

(98) P.V. Thacker, "Occupational Health Services - Today & Tommorrow", Indian Journal of Industrial Medicine, 17, 1971.

XI

HEALTH EDUCATION

1. Introduction 211

2. Development of Health Education in India 211
   - Administrative set-up for health education
   - Health education activities undertaken by the CHEB and SHEBs

3. Primary Health Care : Need for New Approaches to Health Education 219

HEALTH EDUCATION

1. INTRODUCTION

Theoretically, health education forms an essential part of the modern health system. Structurally, however, it has occupied an isolated position at the lowest rung of the status hierarchy in the health bureaucracy. The need for upgrading and reorienting its role in the health system has been perceived due to the following reasons:

(a) The imported nature of the health education system;
(b) The decision to provide basic health to all by 2000 A.D.;
(c) The curative orientation of the medical personnel which has reduced the effectiveness of the health care system;
(d) As an essential prerequisite for community participation.

This chapter reviews the administrative set-up, policies, foci and assumptions of the health education programme in India, and outlines the new approaches that are being currently advocated.

2. DEVELOPMENT OF HEALTH EDUCATION IN INDIA

The importance of health education in promoting the acceptance among people of public health programmes has long been recognised. (1) As early as 1929, a publicity unit for disseminating health information was established in the Directorate of Health Services of the State of Mysore. From 1940s onwards, publicity units were set up in most of the princely states and some provinces "through which education to the masses on various aspects of health (was) started". (2) Mass communication was limited to informing the public about anti-epidemic measures, and seeking their co-operation in preventing and controlling diseases. The Bhore Committee Report (1946) recommended the creation of health publicity bureaus at the centre and the states; the integration of health education in preventive and curative health; and pin-pointing all sections of the population including school children as targets for education. The need for training specialists and field workers was emphasised, and skills in conducting health talks, cinema shows, demonstrations and the use of a variety of aids and media were expected to be developed. (3)

Administrative set-up for Health Education

The importance of health education in achieving public health goals was emphasised in the First Plan document. "All progress in public health

---

(1) For the ancient origin of the concept of health education in India, see Lois Philip, Health Education in India: Review of the Past, Analysis of the present, Suggestions for the future, Report submitted to the ICSSR Committee on Health & Medical Services, (mimeographed, 1978).

(2) Government of India, Central Health Education Bureau (CHEB), Report on Status of Health Education in India, (New Delhi: Directorate General of Health Services, Ministry of Health & Family Welfare, 1980).

(3) GOI, Health Survey and Development Committee (Bhore Committee), Report, Vol.II, (New Delhi. Manager of Publications, 1946), pp. 86-89; 107.

depends ultimately on the willing assent and co-operation of the people and their active participation in measures intended for individual and community health protection. Considering how much illness is the result of ignorance of simple hygienic laws or indifference to their application in practice, no single measure is productive of greater return in proportion to outlay than health education".(4) The establishment of Central and State bureaus were recommended, but adequate funds were allocated only during the second plan period.

Central Health Education Bureau (CHEB)

The Central Health Education Bureau was established in 1956 in the Directorate General of Health Services (DGHS), with the assistance of the United States Technical Co-operation Mission (USTCM-now USAID). The objectives of this apex body are: (5)

(i) To interpret the plans, programmes and achievements of the Health Ministry.
(ii) To train key health & community welfare workers in health education and in research methods; to evolve effective methodology and tools of training.
(iii) To design, guide, co-ordinate and conduct research in health behaviour, health education process and aids.
(iv) To prepare and distribute various types of health education materials to states and other agencies.
(v) To render technical and other assistance to official agencies engaged in health eeucation work and to co-ordinate their programmes.
(vi) To co-operate and collaborate with international agencies in promoting health education activities.
(vii) To help the schools & teacher training institutions make the maximum use of the opportunities for health education among the school population, including the development of sound health practices.

The Bureau initially carried out its activities through three technical divisions - Media Division, Methods Division and School Health Division. With the expansion of activities, these have increased to eight divisions. (6)

State Health Education Bureaus (SHEBs)

In 1954, the Central Council of Health recommended the establishment of state health education bureaux with central grants. The council resolved, "As health education of the various social groups of population can only be undertaken by State Governments, the council recommends that they should actively consider the building of Health Education Bureaux as a part of their State Health Departments, and plan a suitable field programme in collaboration with their educational departments and social welfare

---

(4) Cited in Ibid.

(5) Ibid.

(6) Ibid.

organisation." (7) A set of general and specific objectives, functions and organisational plan were formulated for the purpose of setting up the state-level bureaux.

The general and long-term objectives of the SHEB are -

(i) To help people to achieve health by their own actions and efforts.
(ii) To assist people to shoulder responsibility for their community's health.
(iii) To obtain people's active participation and support for public health programmes and policies.
(iv) To encourage people to fully utilise the health services provided by the Government and other agencies.

The specific, short-term goals included:

(i) To collect baseline data of the prevailing pattern of health habits, attitudes, beliefs, values etc. in representative areas of the State.
(ii) To evaluate the methods and media of health education used at present.
(iii) To provide in-service training in Health Education to midwives, dais, health visitors (the contemporary Health Assistants), teachers etc.
(iv) To include Health Education Courses in the pre-service (pre-placement) training of health personnel, teachers, village level workers, social education organisers, etc.
(v) To reproduce suitable health education materials. (8)

The organisational set-up of the SHEBs consists of the Administration Section, Materials Section, Field Study and Demonstration Centre, Training Section and School Health Education Section. Each SHEB oversees the activities of a number of District Health Education Units and of the Primary Health Centres (PHCs).

Health Education Activities undertaken by the CHEB and SHEBs

Media and Publicity : CHEB has an editiorial and an audio-visual section. The former brings out popular journals on health problems (Swasth Hind and Arogya Sandesh), produces publicity materials such as pamphelets, folders, handbills, booklets, etc., produces spot reports & background material on health topics for the mass media and prepares Technical Report Series on research and evaluation projects. The latter section has films, photography, museum, exhibition and art units, and has prepared educational kits for use by health assistants and midwives. (9) The SHEBs, too, have produced publicity material which is periodically distributed to medical and public health institutes, municipal corporations, municipal committees,

---

(7) Government of India, Scheme for the Establishment of Health Education Bureau in States, (New Delhi, mimeograph).

(8) Ibid.

(9) Philip, op.cit., pp.8-9.

hospitals, schools, colleges, PHCs and voluntary organisations. (10) They are extensively involved in conducting exhibitions in their respective states. (11)

Training

The CHEB has developed a professional training programme of 12 months duration leading to a Diploma in Health Education of the Calcutta, Madurai and Delhi Universities. The State Bureaus have undertaken short training programmes, orientation courses and pre-placement courses for a variety of health and allied workers mostly on behalf of other agencies. The CHEB has prepared courses and manuals for use in Health and Family Welfare Training Centres which train multi-purpose workers (MPWs). (12)

Field Study-cum-Demonstration Centres

There are urban and rural centres for exposing staff and student to the field situations, and for undertaking field studies. However these centres have only partially been developed at the state level, usually in co-ordination with easily accessible PHCs. (13)

Research and Evaluation

The CHEB has undertaken behavioural research, field studies and research-cu,-action campaigns. The SHEBs have mostly undertaken small studies related to knowledge, attitude and practice with reference to the utilisation of Maternity and Child Health (MCH) services and family planning. According to the CHEB survey findings, few studies have dealt with health education approaches and the process of behavioural change in the community. (14)

School Health Education

In 1957, the Ministry of Education set up the Health Education-Nutrition Education Committee to initiate the preparation of syllabi on health education for schools and teacher training institutions. The CHEB co-ordinated the preparation of syllabi, and conducted 6 states-level joint workshops of health and education personnel as an orientation for implementating the syllabus. However hardly any state has introducted it in the school curiculum. (15)

The school health programme has largely consisted of periodical check-up of students for diseases and deficiencies. The WHO's review of school health education in India decried the narrow focus of these services on physical examinations, and recommended a more broad-based and cost-effective

---

(10) GOI, CHEB, 1980.

(11) Lois, op.cit., p.16.

(12) Ibid, pp. 10-11.

(13) Ibid, pp. 11,16.

(14) GOI, CHEB, 1980, p.

(15) Philip, op.cit., p.11.

approach concentrating on personal hygiene, health education, sanitation of the school premises, etc. (16) To conserve limited resources, the WHO has also recommended the training of school-teachers themselves so that they can recognise, and refer to the local health services, the obviously sick and backward children.

Subsequently the CHEB has collaborated with NCERT in developing a revised school health curriculum and the preparation of text-books. (17)

Family Welfare Programme : Extension Education, Mass Education and Publicity

The role of education and motivation in gaining acceptance for family planning was highlighted in 1963, when the traditional clinic approach was found to be inadequate. (18) With the creation of a full-fledged Department of Family Planning in 1966, within The Ministry of Health, Family Planning and Urban Development, state and district level health organisations and urban and rural family planning services were strengthened by the inclusion of education and extension staff.

The State Family Welfare Bureaus include among their staff Mass Media Officer and specialist Health Education Officers; and the district Bureaus have been provided with Extension Educators and Mass Education and Information Officers to provide mass publicity and mobile service support to the programme. The pre-MPW Scheme staffing pattern for rural health services (19) included a Block Extension Educator (BEE) per PHC, to be assisted by a male FP field worker and an auxiliary nurse midwife (ANM). At present, the male and female multi-purpose workers (MPWs) are responsible for family planning motivation at the sub-centre and village levels.

Extension Education : The model of extension education adopted by the family planning programme has been called the KAP (Knowledge, Attitude, Practice) Model. It assumes that the presentation of appropriate information to the target group, the community or influential local leaders (perceived as change agents) would lead to increased knowledge and this, in turn, would create positive attitudes towards innovative health practices; positive attitude in turn would lead to the adoption of the new practice.

In recent years, with the adoption of the goal of reducing the birth rate to 21 per 1000, and a net reproduction rate to 1.00 by 2000 A.D, the KAP approach has undergone some modifications. According to the Department of Family Welfare, (20) there is awareness about family plannning among 90 per cent of the population and about 60 per cent have favourable attitudes. However the actual acceptance and practice has remained at a low level. In order to generate demand for FP methods and raise the eligible couple

---

(16) World Health Organisation, Final Report on Health Education in Schools: India (WHO Project : India 180), July 1964 - July 1967, (New Delhi : WHO-SEARO, 1968).

(17) Philip, op.cit., p.12

(18) See the chapter on Population, Health and Development in this chapter.

(19) See the chapter on Organisation of Health Services and Manpower Development.

(20) GOI, Annual Report 1985-86, (New Delhi : Ministry of Health and Family Welfare, 1986), pp. 204-212.

protection rate from 32 per cent to 60 per cent, the IEC (Information, Education and Communication) Model has been advocated. This approach emphasises - (21)

(i) information about the range of contraceptive methods, the facilities available under the Maternal and Child Health (MCH) services, universal immunization, Medical Termination of Pregnancy, etc.;

(ii) education about the age at marriage to gain support for the legal minimum age; delaying marriage; delaying the first pregnancy; and spacing births with intervals of at least 3-4 years.

(iii) communication, i.e. an emphasis on person-to-person approach in explaining the method so that doubts or misconceptions are clarified simultaneously. It also advocates the use of communication material that has been designed according to the requirements of the area, and to the socio-cultural and economic background of the audience and/or community, etc.

There was a spurt in extension work in 1979-80, in an attempt to revitalise the family planning programme. (22) In 1984-85, 50,000 orientation Training Camps in villages and urban slums, covering 2.5 million opinion leaders, were held. The camps focussed attention on the relation between development and population growth, and emphasized different methods as also MCH services. (23)

Mass Education and Media (MEM) Activities: A few years after the adoption of the extension approach, the family planning programme also incorporated mass media techniques for education and publicity. The strategy has been to present a few short, repetitive, powerful messages to the public through all modern mass media (broadcast media, T.V.network, films, hoardings) and the traditional folk media to which people are accustomed and in which they participate. (The technique is similar to the advertising and propaganda approaches).

This strategy incorporates the support of the media units of the Information and Broadcasting Ministry. In 1974, the need to widen the range of messages was also felt, and MEM activities have attempted to highlight the significance of health, nutrition, maternal and child health, water supply, status of women, education and other factors facilitating the adoption of a small family norm. (24) The total budgetry allocation for MEM activities for 1985-86 was Rs. 1,111 lakhs, out of which Rs. 505 lakhs was for States/UTs, Rs. 401 lakhs for the Media units of the I and B Ministry and Rs, 205 lakhs for central projects. (25)

---

(21) Ibid.

(22) GOI, Family Planning Programme in India : Year Book 1979-80, (New Delhi : Ministry of Health and Family Welfare, 1981), p.22.

(23) GOI, Family Planning Programme in India : Year Book 1984-85, (New Delhi : Ministry of Health and Family Welfare, 1985), p.37.

(24) V.N. Kakar, Population Communication in India, (New Delhi : Ministry of Health and Family Welfare, 1979).

(25) GOI, MOHFW, 1985, p.34-35.

Population Education : Population education in schools and colleges, in adult, continuing and non-formal education, in programmes for industrial workers and apprentices, coal miners and plantation workers, are other components of the education and motivation approach to family planning. (26)

Assessment of the Educational Component in FP Programme : The establishment of the family planning bureaus with their own educational and publicity components, separate from the health education activities of the SHEB, led to a decline in the latter's functioning and importance. According to Philip, "Instead of using the already existing bureaus with its organisational set up to full advantage to serve the needs of the prestigious family planning programme, administrators found it best to ignore what was already available and to set up a monolithic organisation with little co-ordination with what was already existing". (27) Furthermore, the use of incentives, the setting of targets and the utilisation of lay workers to meet these targets, caused a set-back to the extension approach. Referring to a study of the FP programme in five districts in Uttar Pradesh, (28) Banerji pointed out : "It was also observed that the use of coercive techniques, ... and the sporadic use of substantial incentives, had done much to undermine the credibility of the programmes' educational strategy. Once incentives or coercion have been used, it is almost impossible to return to an entirely voluntary and educational approach". (29)

This study, as also an earlier study on 19 villages, (30) has shown that the failure of the health workers to develop a rapport with the villagers (the starting point in any IEC approach), due to the former's negative association with coercive family planning practices, meant that the villagers were unable to translate their "felt need" for contraceptive services into practice. There were several instances of pregnant women who, failing to get suitable family planning services from the primary health centre, took recourse to induced abortions to get rid of unwanted pregnancies. (31) The UP study underlines the fact that the activation of the health services system at every level is the primary task for activating the family planning programme in the country.

Hospital Based Education

The family planning programme gave a filip to educational activities in hospitals. The All India Hospital Post Partum (AIHPP) programmes were

---

(26) GOI, MOHFW, 1985, pp. 37-38.

(27) Philip, op.cit., p. 18.

(28) B.D, Mishra et al, Organization for change A Systems Analysis of Family Planning in Rural India, (New Delhi : Raeliant Publishers, 1982).

(29) D. Banerji, Health and Family Planning Services in India, (New Delhi : Lok Paksh, 1985), p.230.

(30) D. Banerji, "Health Behaviour of Rural populations in India : Impact of the Primary Health Centres", Economic and Political Weekly, Vol.XIII, 1974. Cited in D. Banerji, Health Education and Community Health Behaviour, (New Delhi : VHAI, September 1978, mimeograph).

(31) Ibid, p.5

introduced in 1969. In the teaching hospitals this programme has been conducted by a Lecturer in Health Education functioning through the Department of Preventive and Social Medicine.

Hospitals, according to the CHEB, are service institutions which can effectively promote health education among patients as well as the family and community. A combination of services and health education is found to be most effective in bringing about behavioural changes in health practices. As teaching centres, hospitals also have a role in training health and medical personnel in health education. (32)

According to a study undertaken by CHEB, some form of health education activity was being conducted by the hospitals surveyed. (33) Thre three major preventable health problems reported by the hospitals are infectious diseases, nutritional disorders and gastro-intestinal infections. Obstetric and gyneacological problems are common and sexually transmitted diseases are on the increase. Education and information regarding these health problems are being imparted most commonly through individual talks by doctors and health educators in the OPD wards and special clinics. Group talks, display of posters, exhibitions and printed material have also been used in the hospital situation.

The community work undertaken by some hospitals has involved a variety of approaches and personnel. As against individual talks by doctors in hospitals, health education in the community setting has involved ,home visits by public health nurses (PHNs), medical social workers, and lecturers in health education; mass meetings and group meetings conducted by PHNs and extension educators; and shows and exhibitions held by the health educators in co-ordination with the District Health Officers (DHOs). Community health education activities have been undertaken by para-medical health workers rather than by doctors and nurses. (34)

National Health Programmes (35)

The CHEB has a wing that looks after the educational and publicity requirements of the vertical health programmes.

(i) The National Malaria Eradication Programme (NMEP) incorporated the health education component when it encountered resistance to DDT spraying. With the adoption of the Modified Plan of Operations for Malaria Control (MOP) in 1977, people's co-operation in the active search for fevers and in the collection of blood slides was felt. Publicity material to arouse public awareness has been prepared and motivational work is undertaken by the MPWs and Village Health Guides (VHGs).

(ii) Educational support was important to the intensive surveillance - containment approach of the small pox eradication programme. Coloured photographs were used to aid people in identifying and notifying the diseases.

---

(32) GOI, CHEB, 1980, p.67.

(33) Ibid, pp. 67-75.

(34) Ibid.

(35) Philip, op.cit., pp. 22-26; GOI, MOHFW, 1986, pp. 39-41.

(iii) The educational component of the National Tuberculosis Programme (NTP), undertaken by para-medical workers, has concentrated on acceptance of BCG vaccination, co-operation in case-finding and treatment compliance.

(iv) The National Leprosy Control Programme (NLCP) has functioned through Survey Education and Treatment (SET) centres manned by trained para medical workers, in areas with an endimicity between 5 and 10 per 1000. The problem of 'stigma' has been a special concern in the preparation of educational materials.(36)

(v) The National Blindness Prevention Programme has implications for the school health programme. Basic concepts on eye care have been incorporated in the school curriculum. Educational folders in the regional languages and audio-visual materials have been distributed.

(vi) The Diarrhoeal Diseases Control Programme has introduced folders for the community and Village Health Guides, and flip charts for para-medicals for purposes of preventive information and promotion of the oral rehydration therapy (ORT).

The Applied Nutrition Programme and the Integrated Child Development Scheme, the Expanded Programme of Immunization, and other programmes for the control of cholera, goitre, etc have educational components.

However the health education component of the national programmes have not been very effective. Banerji for example, points out that the thrust of the Leprosy programme has been on case-finding and case-holding, the problem of stigma and health education, without adequate attention being paid to the availability & accessibility of health services, supply of drugs, interpersonal communication and the health worker-patient relationship and the health worker-community relationship. He also cites the case of the National Tuberculosis Programme, which has focussed on obstacles to case-finding and on treatment default in its health education component. However, the findings of a field study have indicated that, due to the "weaknesses in the services, a very large number of tuberculosis cases, who were actively seeking help, were not even being diagnosed as cases of tuberculosis and were being turned back with a bottle of useless cough mixture. ...Similarly, studies of treatment default ...indicated that organisational, managerial and technological lapses, rather than lapses on the part of patients account for the bulk of the problem. ...Health educators in India have a tendency of immitating the approaches that have been developed in western countries & of almost blindly rushing in to take upon themselves the task of rectifying the 'faults' of the community, without fully questioning the adequacy of the services that are being provided". (37)

3. PRIMARY HEALTH CARE : NEED FOR NEW APPROACHES TO HEALTH EDUCATION

The need to arouse people's sustained involvement and participation in health programmes in the context of the goal of Health for all by 2000 A.D., has once again highlighted the importance of health education. The assessment of the status of health education in India by the CHEB and other

---

(36) For instance, see R.K. Mutatkar, "Social and Economic Aspects of Leprosy", Working paper presented at the Meeting on Social and Economic Aspects of Leprosy, Knala Lampur, 1-4 December, 1981.

(37) Banerji, 1978, pp. 2-3.

Government bodies has mainly identified the administrative and functional weaknesses. Most evaluation studies have relied on the questionnaire method in getting data and feedback on the functioning of various institutions and agencies such as the SHEBs, District Health Education Units and PHCs; the problems cited include the lack of funds, of trained manpower, of materials, of transport facilities and the lack of committment on the part of the health services bureaucracy to this activity. (38)

However the wider objectives of the primary health care approach has highlighted the need for new approaches to health education. The Expert Committee of the WHO pointed out that,

"Originally, health education developed along the lines of the biomedical views of health and disease current at that time, according to which social, cultural and psychological factors were thought to be of little or no importance. The assumption was that people would enjoy better health if they would act in the manner recommended by health workers....

The term "health education" itself suggested to some the outward and downward communication of "health knowledge"... on how to avoid illness or on how to cope with disease". (39)

The reorientation of the educational approach to health must aim at increasing "individual and community capabilities for involvement and self-reliance in health and to promote healthy behaviour, particularly regarding family health and nutrition, environmental health, healthy life-styles and disease prevention and control". (40)

Broad Features of the New Approaches : (41)

(i) Understanding the 'health culture' of the community - Today there is recognition of the fact that there is conventional wisdom in every community which is manifested in the form of health beliefs and practices, and which guide their perception of their own health problems. New strateiges of health education need to start from and build upon, the existing "health culture" of the community. Instead of fitting people into a pre-determined framework of health care this approach calls for an understanding by health workers, through a process of dialogue and interaction, of the people's perception of their health needs and their acceptance and utilization of different health care technologies. The assumption is that "sociocultural factors and beliefs are not necessarily obstacles to development, in fact they can be points of departure for development". (42) Drs.

---

(38) GOI, CHEB, 1980; Philip, op.cit.

(39) World Health Organization, New Approaches to Health Education in Primary Health Care, Report of a WHO Expert Committee, Technical Report Series 690, (Geneva : WHO, 1983), p.8.

(40) WHO, Seventh General Programme of Work covering the Period 1984-1989, (Geneva : WHO, 1982).

(41) WHO, 1983, pp. 16-17.

(42) Ibid, p.17.

Deodhar and Arole have provided useful examples of the positive beliefs and practices in the Indian society, that can be used in a meaningful way to promote positive health. They also outline some of the harmful traditions that need to be changed, but which require a great deal of sensitivity on the part of the health worker. (43)

(ii) Utilising indigenous and traditional providers of health care - In order to achieve community self-reliance, there is a need to mobilise the indigenous practitioners and midwives ('dais'). This approach requires a shift from the elitist attitude to one of respect for lay values, practices and preferences in health.

(iii) Communication versus motivation or intervention : Despite the broad perspective that is visible in the objectives of health education activities in India, the actual policies, and the manner of their implementation have looked at people as the object of a development process, to be informed and motivated. According to the new approach, every man and woman is "capable of being actively involved in matters regarding their own health, provided that they are aware of the issues involved, of the resources available and that their efforts have social and political sanction. (44)

(iv) Reorientation in the roles, attitudes and training of health workers in keeping with the above objectives.

---

(43) N.S. Deodhar and R. Arole, Health Education in the Context of Traditions, Paper Submitted to the ICSSR Committee on Health and Medical Services, (mimeographed, 1978).

(44) WHO, op.cit., p.39.

INDEX

Accidents as occupational hazards 208, 209(tb), 210
Air Pollution 200-201(tb)
  Air(Prevention and Control of Pollution) Act 1981, 204
  Major sources 202-203
Allopathic System, Western 1-2
  Practitioners: training 31-32
Applied Nutrition Programme (ANP) 178-179, 219
Ayurvedic System of Medicine 1,17, 32, 107, 109, 110-111, 112(tb), 113, 114, 115, 116, 117, 118

Banerji D. 5, 29, 67, 71, 117, 172, 217, 219
Batliwala S. 177
Bhore Committee Report 2-5, 7, 10, 21, 66, 109, 184, 211

Cancer (Neo-plastic) see Diseases
Cardio-Vascular Diseases see Diseases
Central Bureau of Health Intelligence (CBHI) 19
Central Council for Research in Ayurveda & Siddha (CCRAS) 116
Central Council for Research in Homeopathy (CCRH) 116
Central Council for Research in Indian Medicine & Homeopathy 116
Central Council for Research in Yoga and Naturopathy (CCRYN) 116
Central Council of Health (CCH) 9
Central Council of Indian Medicine (CCIM) 111
Central Drugs Standard Control Organization 105
Central Health Education Bureau (CHEB) 19, 212, 215, 218-219
Central Indian Pharmacopeia Laboratory 106
Children's Health Status
  -Energy Needs 168-169
    calories deficiency diseases 169
    protein-calorie malnutrition 168-169
  -Health programmes 160-165, 178-180
  -Immunization of mothers & children 17,19,65,135,158-159,160,162,163, 164,219
  -Mortality and morbidity 157-160
Chadha Committee 33
Chopra (Col.R.N.) Committee 110
Community Health Volunteers (CHV) see Health Guides (HGS)
Community Health Workers (CHWs) Scheme 36-37,119 see also Health Guides

Dandekar V.H. 170-171
Dave Committee 110
Diseases 2,3,7,17,86,87,183,187,192
  -Communicable 7,13,60(tb)-81,86,87, 183,187,192
    acute respiratory infection 60, 63(tb), 203
    cholera 2,3,7,12,14,16,61,63(tb) 65,218
    diarrhoea 89,103,147,154,158, 164,182-183, 192,219
    diptheria 159, 162
    dysentry 3,192
    filariasis 7,60,65,75-77
    gastro enteritis 60,154
    leprosy 7,60,65,77-81,87,183,219
    malaria 5,7,10,12,14,60,65-71, 89,121,154,183,218
    pertusis 159, 162
    plague 2,3,61,62(tb)
    small-pox 2,3,7,61,64,65,218
    tetanus 37,60,154,159,162
    tuberculosis 7,14,60,65,72-75, 85,87,93,94,139,195,200,202,205, 219
    typhoid 93,95,154,159,182,192
  -Health education component 25,211, 218-219
  -National control programmes 10,12, 14,19,20,21,24,33,35,39,40(tb),49, 50,53,65-81,84,117,218-219
  -Non-communicable diseases 61,81-82.182
    cancer 82,102,200,202,203,208
    cardio-vascular 81-82.203
  -Nutritional disorders
    anemia 145,150,154,159, 175-180
    goitre 65,89,176-177,181,219
    lathyrism 176-177
    vitamin A deficiency (blindness) 89,164,175,180,219
  -Occupational 204-206
    asbestosis 206
    bagassosis 206
    byssinosis 202,206
    pneumoconiosis 205
    silicosis 205-206
Drugs and Pharmaceuticals
  -Drug consumption-India 84
    over consumption 94
    over prescription 94
  -Drug policy 87,95,99,103,105-106
  -Drug production
    brand names 92,104,105
    bulk drugs and formulations 87, 96-98(tb),99,101-102

Committee on Drugs & Pharmaceuticals (Hathi committee) 86,100, 104
essential drugs 85-89
imports, effects of, 98(tb),99
lists 86-87,92,95
irrational and hazardous drugs 90(tb),92-94,102(tb),103
non-essential drugs 89,90-91
plan targets 88(tb)
quality controls 105-106
-Drugs and Cosmetics Act 1948, 105
-Drugs - expenditure 83
-Drugs - shortage 81
-Industry 83(tb),94,95,97
pricing 101-102,
production pattern 96-98,
research & development 99-100,
structure 96
-Marketing practices 102-103

Employees State Insurance Act (ESIA) 1948,208,210
Environmental Hygiene Committee 184,189
Expanded Programme for Immunization 19,20,25,65,158-159(tb),160,164,219

Family Planning 20,25,215-216
-Education 215-216
-Socio-economic factors 144
Family Planning Association of India (FPAI) 131
Family Planning (Welfare) Programme 129-142,215-217
-Approaches : `cafetaria´ 135, camp 132,138, clinic 131, extension 131-132, integrated 117,134,136,144 with multipurpose workers scheme 135, welfare 136
-Educational component 216
-Emergency period 128
-Five Year Plan outlays 39-44,129, 130(tb)-131,132,136-137
-Incentives 134,141
-Methods 132-142
-National policy 129
-Organisational structure 19-21,129 131
Filariasis see Diseases
Five Year Plans
-Health and family planning 5-13, 39-44,47(tb),66,129-130(tb), 131-132,136-137
-Housing 198-199(tb)
-Indian systems of medicines 119-120,122
-Minimum needs programme 136
-Nutritional intervention programmes 178-180
-Water supply and sanitation 185, 188
Folk Medicine: Home Remedies 109
Food Fortification Programmes 181

Goitre see Diseases

Health Care Financing see Health Expenditure
Health Care Services 9(tb), 71, 83, 109
-Evaluation 13-16
-Five year plans 5-13
-Organisation and administration 5; 7-10, 19-26, see also Rural Health Services System
-Personnel 28(tb)-37
Health Care System
-British period 2-3
-Planned development 5-13,17-18
-Pre British period 1-2
Health Culture 1, 220
Health Education 211-221
-Activities 213-219
-Organisational structure : CHEB and SHEBs 211-213
-Primary health care and new approaches 219-221
Health Expenditure 38-59,83,87
-Private expenditure sources 59-56,
corporate sector 59
private and voluntary sector 58
private household expenditure 56-58
-Public expenditure
differentials 50-55(tb)
heads : family planning 41(tb), family welfare 39(tb), health facilities 52(tb), medical education 53, nutrition programmes 43(tb), public health 40 (tb), water supply and sanitation 39,42(tb),45(tb)
sources 39-56
centre 39-44
local 55-56
public enterprises 55
state 44-46,47(tb),48(tb), 49-56
Health for All by 2000 A.D. Programme 18,24,117,137,211,219
Health Guide Scheme 4,12,24,36-37
Health Manpower see Medical and Health Personnel
Homeopathy 17,20,107,108-109,111-114, 116,118,120

Hospitals and Dispensaries 26(tb), 27,118(tb)
Housing-Rural 196(tb),197,200
Housing Shortage 195-197
Housing-Urban 195,196(tb),197-200

ICMR/ICSSR Study Group 18,21,119
Indian Council of Medical Research (ICMR)72,75-76,81-82,119,142, 167,169,184-185,205
Indian Systems of Medicine 1-2, 17,32,109-119
-Administration 20
-Bhore committee report 109
Central government patronage 109-110
-Colleges 110-112(tb),113
-Committee on the Indigenous Systems of Medicine (Chopra Committee) 110
-Educational standards 110
-Five year plans outlays 120
-Hospitals and dispensaries, statewise 118(tb)
-National level laboratories 116
-Neglect of 119
-Practitioners 32,84,91,113-115(tb),119
-Professionalization 110
-State government patronage 109-110
Infant Mortality 89,153,156(tb), 157,171
-and malnutrition 171,174,177
-Indices 156(tb)
-Rate(IMR) 153,155(tb),169
Infectious Diseases see Diseases: Communicable
Integrated Child Development Services(ICDS) Scheme 164-165, 179-180,219
Integrated Rural Development Programme 192
International Conference on Primary Health Care Approach (Alma Alta) 1978, 137
International Drinking Water Supply and Sanitation Decade 1981-90 186,191

Lathyrism see Diseases
Leprosy see Diseases

Malaria see Diseases
Malkani Committee 189
Malthus, T.H. 142-143
Maternal and Child Health (MCH) Services Programme 20,25,41(tb), 46, 50,134,135,142,153,160-164, 180,214,216
Medical and Health Care Personnel 28
-Categories : Auxiliary medical personnel 21,22(tb), training institutions 33
auxiliary nurse midwives 25,33, 37,training 35
community health volunteers(CHV) training 36
dais 37,109,153
health assistants 35
health guides 36, training 36: evaluation studies 37
health workers 35-36
multi-purpose workers (MPWs) 12,18
nurses 33
physicians 28(tb), 29,31-32
-Training institutions 28(tb),33-34
Medical Education 3,5,11(tb),29-32
-Study Group on Medical Education and support manpower (Shrivastava Committee) 12-13,36
Medical Termination of Pregnancy (Induced Abortion) Act 1971, 136
Minimum Needs Programme (MNP) 12,13, 24,135,136,185,188,200
Mortality and Morbidity 3,10,60-61, 64.145.160

National Environmental Engineering Research Institute (NEERI) 185,191
National Goitre Control Programme 65,89,181
National Health Policy 13,17-18,
National Leprosy Control/Eradication Programme 65,75-80, 219
National Malaria Control/Eradication Programme 7,65-69,71,218
National Planning Committee (NPC), Sub-Committee on National Health 1938, 4,21,109
National Population Policy 1976, 132, 134
National Small-pox Eradication Programme 64
National Tuberculosis Programme 65, 72, 75, 219
National Water Supply & Sanitation Programme 184-185
Naturopathy System of Medicine 17, 32,107-108,113(tb), 116
Noise as Health Hazard 207,208
-Noise levels 204
-Noise pollution 204
Nutrition 167-181
-Educational component 219
-Energy needs
adults 167-168
children 168-169
guidelines 167
pregnant women 177

-Malnutrition & Undernutrition 19,90,167-181
General :protein calorie malnutrition 168-170(tb),171
causes 17,167-169,172-174
controversies 170-171
measurement 168-172
women and children 147,151, 154,157,160,169,171,177(tb)
Hunger and famine : India & China 174
ICDS project 179-180
Infant mortality 169-171
Specific malnutrition 175-179
-Plan Outlays 43
-Programmes 20,43,84,178-180

Occupational Health
-Employees State Insurance Act 1948, 210
-Factories Act 1948, 210
-Workmen's Compensation Act 1923,210
Occupational Health Hazards 204-210
-Accidents 208-209
-Biological agents 207
-Chemicals 206-207
-Dusts 202, 204-206
-Physical agents 207-208
See also Diseases
Organization of Pharmaceutical Producers of India (OPPI) 95

Plague see Diseases
Pollution as Health Hazard
-Air 200,201(tb),202-204
-Noise 204
-Water 192-195
Population
-Birth rates 51,122-128,131,134, 138,142,144,215
-Death rates 3(tb),10,83,121, 122-126(tb)
-Fertility 121,127(tb),128,129
-Growth 61
-Growth rates 122(tb),128,131, 132,142-143
-Health education 215-217
-Incentives 134,140
-Infant mortality rates 3(tb), 10, 121,136-137,142-144,203
-Mortality 121-126
-National Policy 132-135,138
Poverty Line 171,172
Primary Health Centres (PHC) 3,7, 10,11,12,14,15,18,21-25,33,35,162, 191,215
Protein Calorie Malnutrition See Nutrition
Public Health 1,2,8(tb),12,39,44,46, 49,211-212,213

Rath, N., 170
Rural Health Care Services 12,18,21-26,39,40-41(tb), 42(tb),49-53
see also Primary Health Centres
-And family planning activities 11, 25
-Personnel 10,25,28(tb), 33-34(tb), 35-37
-Planned development 7(tb),10,11, 15,18,24(tb)-25

Sanitation as cause of Disease 60, 189, 193
Sanitation Services
-Plan Outlays 42,44,46,185
-Rural 183(tb), 186,191-192
-Urban 183(tb)-186, 189-191
School Health Programme 81,214-215
Sen, Amartya 174
Shrivastava Committee 1975 12-13, 36
Siddha System of Medicine 17,107,108, 111,112(tb), 113(tb), 116,117,118
Small Pox see Diseases
Social and Preventive Medicine 5
Sokhey Committee see National Planning Committee, Subcommittee on National Health 1938
Slums see Housing : Urban
State Health Education Bureaus (SHEB) 19,212-213,220
Sukhatme P.V., 170

Tubectomy 135,139,140(tb),141
Tuberculosis see Diseases

Unani System of Medicine 32,107-108, 109,111-114,116,117,118

Water suppply
-cause of diseases 60,183,192
-plan outlays 39,42,45,51,185,188
-rural 183(tb),184,185
-urban 183(tb),184,185,186(tb), 187,190
Women's Health Status 145-153
-Health services 153,160-164
-Mortality & morbidity 145-152
World Health Organization (WHO)
-Diseases eradication campaigns 61, 64,66,67
-Recommedations
essential drugs 86,95
health education 214,215,220
malaria 66
role of indigenous practitioners 117
uniform code of marketing practices 103

Yoga 107-108